

MATERIAL HANDLING-

FLOW

APRIL 1954

HANDLING • AUTOMATION • PACKAGING AND SHIPPING

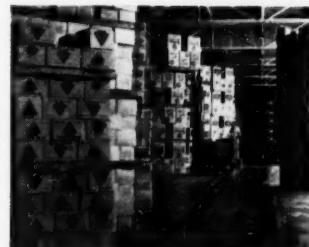
● PRINCIPLES OF EFFICIENT WAREHOUSING

Three outstanding articles on warehousing principles, written especially for FLOW by experts, comprise the first half of this issue's concentrated coverage of warehousing problems.



● APPLICATIONS OF EFFICIENT WAREHOUSING

Sound warehousing principles put to work are illustrated in top-notch FLOW case studies which cover activities in such fields as produce, dairy products, petroleum and others.



● PACKAGING IS MORE THAN SKIN DEEP

The Packaging & Shipping Section emphasizes "more-than-skin-deep" aspects of packaging . . . part of all efforts devoted to economy and to giving customers top-quality products.



Flow Circulation

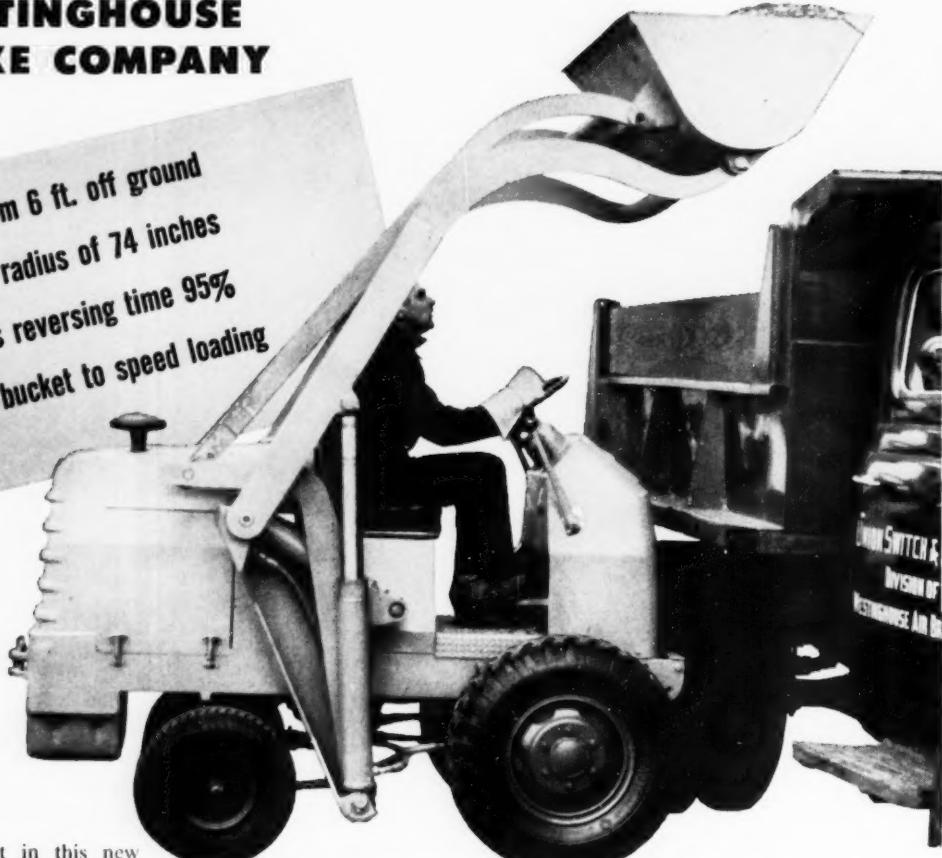
35,627 FLOW BASIC
109,509 FLOW QUARTERLY

FOR HANDLING BULK MATERIALS

the new **Front End Loader**

**BY WESTINGHOUSE
AIR BRAKE COMPANY**

- ★ Dumps from 6 ft. off ground
- ★ Turns in radius of 74 inches
- ★ Reduces reversing time 95%
- ★ Rocks bucket to speed loading



● Every improvement in this new Westinghouse Front End Loader helps to reduce the cost of handling bulk materials in foundries and breweries, in chemical, cement, and fertilizer plants.

YOU LOAD FAST. You can fill the bucket evenly and fully in one pass by rocking it into the load. You can dump from a 73" position — 20" higher than most comparable machines; this gives the operator an unobstructed view of his work, and helps speed material handling. Control levers for rocking, lifting, and dumping are located at the steering wheel right at the operator's finger tips.

YOU MOVE FAST. New planetary reversing clutch type transmission and direct-coupled integral transmission and driving axle shorten the wheelbase and make it possible to turn the $1\frac{1}{2}$ - $\frac{5}{8}$ yard

model in a radius of only 74". This new transmission, with spring-loaded clutches running in oil, cuts normal reversing time by 95%, provides traveling speeds up to 6.25 mph forward and 7.25 mph in reverse. Easy maneuvering, and fast travel trims man-hours

from any bulk loading operation.

GET COMPLETE DETAILS. We have prepared a brochure that completely describes this new Westinghouse Front End Loader; it gives complete dimensions and specifications. Send for your free copy today.



Westinghouse Air Brake COMPANY

INDUSTRIAL PRODUCTS DIVISION

Manufacturers of air compressors, pneumatic cylinders, actuators, air control devices of all kinds, and engineered pneumatic control systems.

IN CANADA: CANADIAN WESTINGHOUSE CO., LTD., HAMILTON, ONTARIO

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When they're Goodyear Industrial Tires -They're Job-Fitted!

See Your Goodyear Dealer for
America's most complete line
of Industrial Tires.



Solid Fact for Solid Users—

Get Goodyear's Xtra Cushion
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(shown above) for top traction
plus greater cushioning.

ANY plant maintenance records will quickly prove this: *A makeshift industrial tire that's wrong either in tread, compound or size leads to early tire failure.*

And to stop this waste, more and more plant operators are turning to their Goodyear Dealer for the right tire for the right job.

You'll find this trouble-shooter can job-fit your operation, too. He has over 100 different solid tire sizes plus a complete line of pneumatics and semi-pneumatics. All can be compounded in either UNiversal chip-resistant or Neoprene oil-, acid-, and chip-resistant compounds. What's more, your Goodyear Dealer will specify the most efficient tread—smooth, grooved, All Service or the famous All-Weather—for your plant's floor surfaces.

For free job-fitted tire recommendations in your plant, call your Goodyear Dealer or write: Goodyear, Industrial Tire Sales, Akron 16, Ohio.

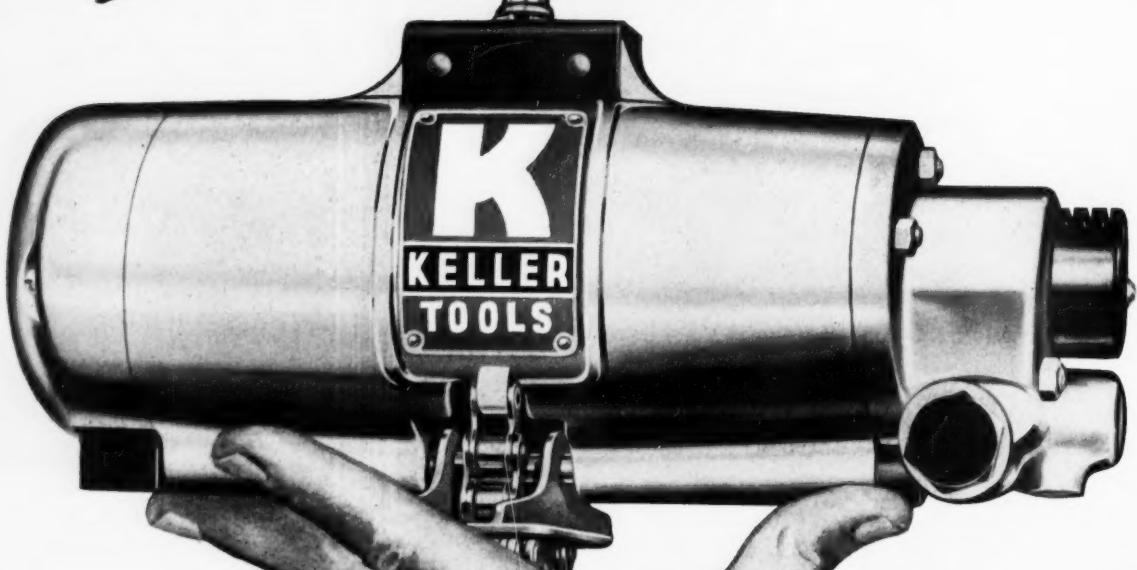
USE THE RIGHT TIRE FOR THE RIGHT JOB-USE

GOOD **YEAR**
INDUSTRIAL TIRES

We think you'll like "THE GREATEST STORY EVER TOLD" - every Sunday - ABC Radio Network - THE GOODYEAR TELEVISION PLAYHOUSE - every other Sunday - NBC TV Network
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WEIGHS 28 LB

LIFTS 1,000!



KELLER AIR HOISTS

Lightness in weight is an advantage you get when you LIFT WITH AIR. One man easily carries a Keller Air Hoist up a ladder and hangs it . . . thus it is easy to move from place to place in the shop, and to service.

POSITIVE CONTROL OF THE LOAD—The Keller Air Hoist operates with an air valve, so it has an infinite number of speeds from the merest "nudge" to 17 fpm. Spotting is easy and accurate with the positive displacement motor and mechanical brake that locks the load in place.

LOWER MAINTENANCE COSTS—An air motor cannot burn out—from overload, stalling, continuous use, or too frequent reversals. Thus the use of air hoists usually brings a substantial reduction in down time and expense.

KELLER TOOL COMPANY

1321 Fulton St., Grand Haven, Mich.

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Available in 3 capacities—
300, 1,000, and
2,000 lb. For full information, ask for Catalog Section 86.



Extra Value

... every time you
turn the key!

**BUDA'S Torque Converter increases
clutch life 6 to 10 times!**

Every time you operate a Buda Fork Lift Truck you're getting extra value. It's especially true when the truck is equipped with a new Buda Torque Converter. Proved by actual field use, the Buda Converter has an extremely low wear effect on the clutch. It increases clutch life 6 to 10 times... lengthens life up to 50%. Torque multiplication is exact, automatic and precisely monitored. Engine power is cushioned through oil to eliminate torsional shock and vibration. You get continuous, smooth power flow, too... whether starting, or climbing a steep ramp. In fact, with the Buda Converter you may start and stop on a 20% grade under full load. And you can also "inch" loads into position without "riding" the clutch. The design of the Buda Converter is simple and trouble-free. There is no external piping, no costly sealing devices. Add it up. You'll find the Buda Torque Converter a smart investment. It soon pays for itself with all the extra value you get. Available on all Buda 3,000 to 7,500 lb. models. Installation can also be made in the field.

Free Book... for those concerned with efficient, low-cost materials handling.
Write for your copy today!



BUDA

The Buda Company, Harvey, Illinois

A Division of Allis-Chalmers Manufacturing Co.

Diesel and Gasoline Engines, Lifting Jacks, Railroad Equipment,
Earth Drills, Materials Handling Equipment

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HOW TO APPLY AND USE

IBH*

**"In-Between Handling"

Short distance hydraulic manipulation of materials too heavy for manual handling yet not requiring high priced power-driven equipment.



More than 40

BIG JOE® Models

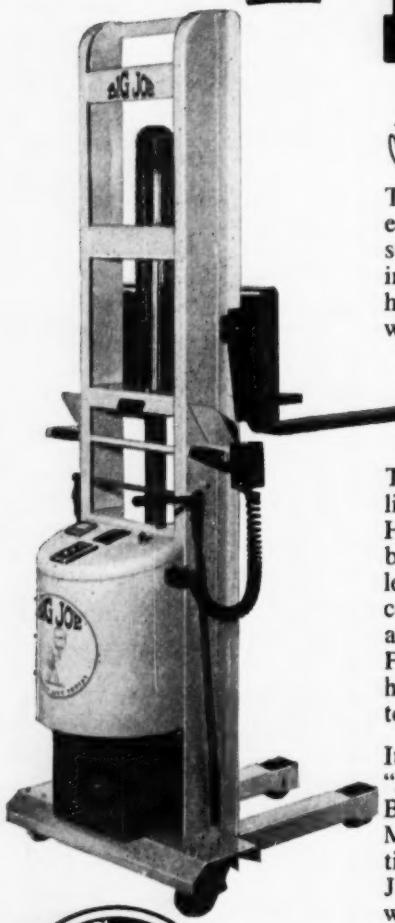
for IN-BETWEEN HANDLING

The IBH* handbook has been especially written for plant executives, materials handling, plant and maintenance superintendents, methods engineers and for any individual interested in *improving* the efficiency of any materials handling system. How does IBH* fit in YOUR plant? What will it do for you? How much will it save in time, labor costs, capital investment, maintenance expense, etc?

You can answer all of these questions for yourself with this new handbook which is available upon request.

The complete line of "BIG JOE" hydraulic lift trucks is designed expressly for "In-Between Handling" with a choice of foot operated and battery operated 6 and 12 volt system units—lever control, push-button control, throttle control. "BIG JOE" offers FLEET OPERATION at the price of a single power-driven fork truck. Fleet operation gives you the *right kind of* help where you want it, when you want it—today, tomorrow, every day.

It will pay you to write for "IBH*—The Economical In-Between System for Handling Materials"—and for full information on the revolutionary "BIG JOE" foot operated lift truck with TRIPLE ACTION PUMP!



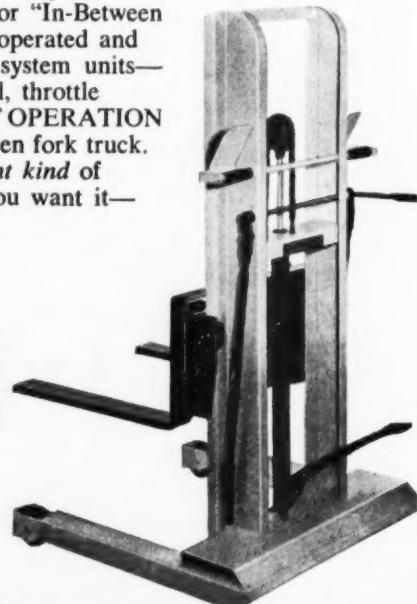
"HYDRAULIC HANDLING FOR EVERY DEPARTMENT"

BIG JOE MANUFACTURING COMPANY

900-08 West Jackson Blvd., Chicago 7, Illinois

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Circle No. 23 on Reader Service Card for more information



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FLOW • APRIL, 1954



APRIL, 1954
VOL. 9, NO. 7

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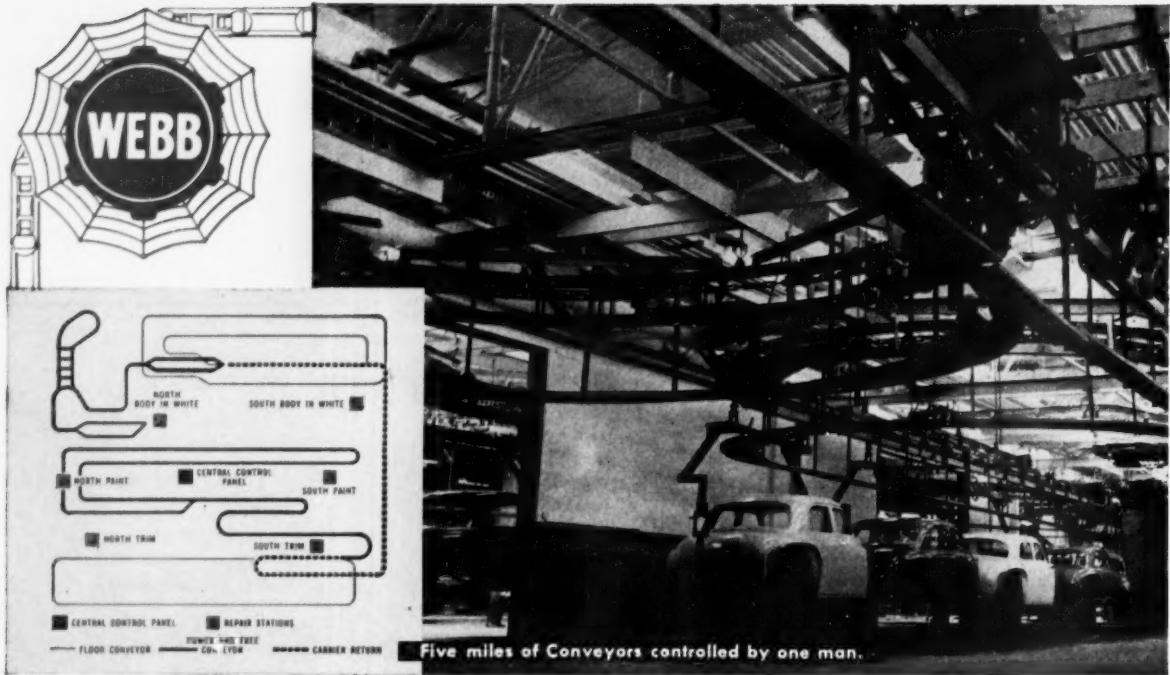
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Published Monthly

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Five miles of Conveyors controlled by one man.

Automatically A Body A Minute

This enormous Detroit plant, floor space 1,100,000 ft., has been modernized to make it one of the most advanced body building plants in the industry. Keynote of body making here is 8 miles of conveyors skillfully synchronized by means of electronic controls to automatically deliver 60 finished bodies an hour.

One of the most impressive features of this operation is a fully automated conveyor system in the body painting department. Here a central electronic panel operated by one man controls a 26,000 ft. system of 56 conveyors. Centralized electronic control was selected to economically hold production delays to a minimum.

Bodies start through finishing on floor conveyors; a semi-automatic device later picks up these bodies and transfers them to overhead "Power and Free" conveyors for painting; after painting, bodies are automatically set on floor conveyors for final processes. This flexible conveyor system has adequate surge-type storage banks and bypass facilities for all production variations.

Whether your operation calls for systematic handling of items as large as auto bodies or something considerably smaller, you will find the extensive engineering knowledge and manufacturing facilities of Jervis B. Webb Company can provide a better answer to your needs.

Additional Webb Services — Through its subsidiaries, Control Engineering and Webb Forging Co., the Jervis B. Webb Co. designs and manufactures electronic and electrical controls for conveyors, machine tools, etc. Also quality drop forgings.

JERVIS B. WEBB CO.

8935 ALPINE AVENUE • DETROIT 4, MICHIGAN

Send for fully illustrated catalog that provides complete information on Webb conveyors



OFFICES IN PRINCIPAL CITIES OF THE WESTERN HEMISPHERE AND LONDON, ENGLAND
FACTORIES: DETROIT • LOS ANGELES • HAMILTON, ONTARIO

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66% of the 75 largest U.S. manufacturing companies use ELWELL-PARKER trucks!

Here are reasons for this outstanding acceptance...You can benefit by them, too!

LOWER MAINTENANCE because E-P packaged unit design insures instant accessibility for preventive servicing. E-P Service Engineers make periodic calls to advise on maintenance and operation.

15 TO 20 YEARS RELIABLE SERVICE because Elwell-Parkers have more alloy steels and forgings, plus extra-reinforcement of critical parts to prevent excess wear or breakdowns.

RIGHT TRUCK FOR EACH JOB because Elwell-Parker supplies over 100 models and all types—low lift platform, high lift platform, fork trucks and cranes.

ENGINEERED UNITS FOR SPECIAL APPLICATIONS Elwell-Parker has unmatched experience in designing special trucks for unusual load or operating conditions.

Get the full story by writing for this catalog. The Elwell-Parker Electric Co., 4234 St. Clair Avenue, Cleveland 3, Ohio.

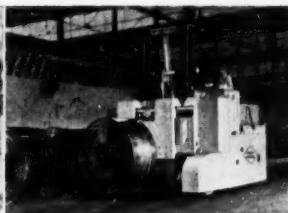


ELWELL-PARKER
POWER INDUSTRIAL TRUCKS

Established 1893



Chemical



Metal Producing



Food



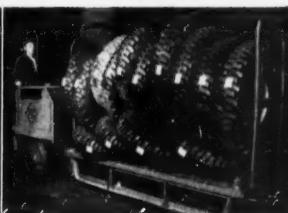
Aviation



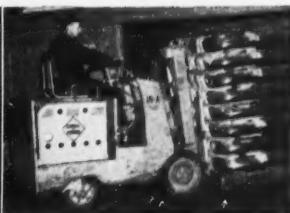
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Paper



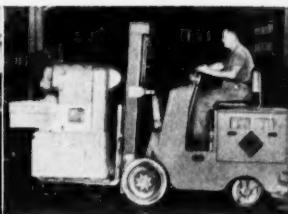
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Metal Working



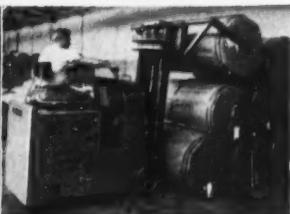
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Machinery

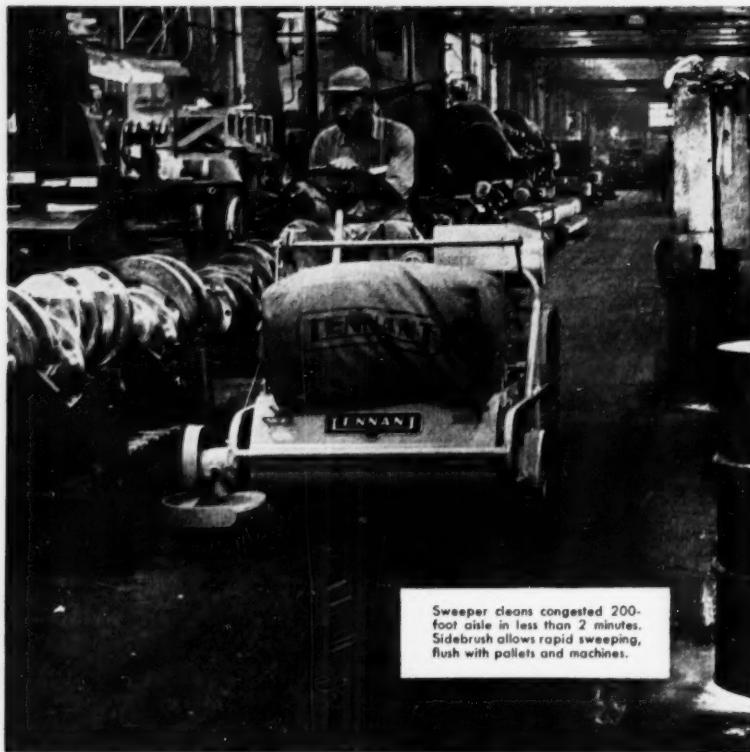


Electrical Products



Textile

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This **TENNANT** Power Sweeper

DOES A 2 Hour SWEEPING JOB IN 10 Minutes!

By the time one man with a pushbroom sweeps halfway down one of the 200-foot aisles shown above, the **TENNANT** Power Sweeper has finished sweeping 6 aisles just like it.

So in just 10 minutes it can sweep an area that would often take 2 hours to do by hand.

It sweeps a 48" path far cleaner than pushbrooms—and right up to pallets and machines. Revolving brush provides 17 strokes per foot of travel, and combines with powerful vacuum system to do an extra-clean job—even draws dust from many cracks.

Often Pays for Itself in Several Weeks

In the plant shown here, one man, with the **TENNANT** Sweeper sweeps to the end of an aisle and back in less than 2 minutes. The machine covers a 48" path, picks up dust and litter "on the run," does a U-turn in about 3 seconds. You can reverse it instantly, turn in a 5-foot radius . . . dump its loaded dirt hopper in 30 seconds.

Performance like this—round-the-clock when necessary—makes it easy for this sweeper to pay for itself in 1 to 6 months in most plants. Write today for full information.



G. H. **TENNANT** CO.
2576 N. 2nd Street
Minneapolis 11, Minn.

POWER SWEEPERS

INDUSTRIAL MAINTENANCE EQUIPMENT
Circle No. 126 on Reader Service Card for more information

LETTERS to the editors

Inexpensive Handling of Light Loads

To FLOW:

We secure paper in cases which weigh between six and seven hundred pounds apiece. It is too much for one man to take a hand truck and move these cases around. I know there are trucks that lift material, but where we store our paper there is not very much room to use a lift truck, unless it would be a very small one.

Anything you may do to help solve our problem will be greatly appreciated.

Ralph L. Fry
York Pennsylvania Press, Inc.

Lift truck manufacturers have designed a relatively inexpensive lift truck for handling light loads. Reader Fry has been forwarded a list of names.

Bagged Cement Unloading Problem

To FLOW:

At the present time, we are interested in procuring a machine which can be used to unload cement bags from a trailer directly into the cement hopper.

We understand that such a machine is now being manufactured, and from the description we had, we will try to repeat this to you:

It is a machine with a chain belt affair. A pair of hooks grasp the cement bag, lift it up directly over the hopper, and there the bag is cut, so the contents can be emptied into the hopper. We would appreciate your relaying our information to any fac-



1 NEW MAGNETIC BELT UNIT

Any ferrous scrap or small parts can now be handled at inclines up to 72° with this new, low-cost Rapistan *MP* Magnetic Conveyor. Designed especially to operate in "tight spaces," the new unit features a highly magnetized bed which attracts any ferrous materials to center of belt, eliminating need for guard rails. Magnetic field ends at top, permits items to fall freely into tote box. Full details in Bulletin MP-54.



2 NEW LIVE ROLLER CONVEYOR

New Rapistan LR unit is a horizontal conveyor that moves materials economically, has unusual safety features, and solves belt wear problems. Unit allows sweep-off or accumulations of items. Has belt pressure adjustments at all points. Anything caught by rollers or belt can quickly be retrieved as entire roller assembly safely pops out. Wide selection of belt speeds and roller carrying widths. Details in Bulletin LR-54.

NEW! Three *Rapistan*® money-saving units

3

NEW, LOW-COST SEALED CASTER



Rapistan's new 5200 Series Cold-Forged Sealed Casters cost $\frac{1}{3}$ less than *non-sealed* casters, yet can be used in much wider range of applications. Dirt, acids, alkalis, brines and other chemicals are sealed *out* of the coin-hardened race-ways, lubricants are sealed *in* for longer life, fewer replacements under loads to 1200 lbs. Choice of metal, plastic or MB rubber wheels in all sizes. Ask for Bulletin 52-54 for specifications.

* Send for new field reports



telling how other Rapistan conveying equipment has solved handling problems similar to those facing you. Indicate your interest on the coupon and we'll send pertinent reports describing the problems, the solutions and the results. Also indicate desired bulletins regarding new products shown here. Mail to:

The RAPIDS-STANDARD COMPANY, Inc.
165 Rapistan Building, Grand Rapids 2, Michigan

Please check your business classification:

Manufacturing Agricultural Wholesale Retail

Check reports below which will be of greatest benefit to you.

<input type="checkbox"/> Aircraft Parts	<input type="checkbox"/> Fruits, Vegetables	<input type="checkbox"/> Meat Packing
<input type="checkbox"/> Auto Supplies	<input type="checkbox"/> Furniture	<input type="checkbox"/> Metal Stamping
<input type="checkbox"/> Beverages	<input type="checkbox"/> Grain and Feeds	<input type="checkbox"/> Paint Products
<input type="checkbox"/> Building Supplies	<input type="checkbox"/> Grain Milling	<input type="checkbox"/> Paper, Publishing
<input type="checkbox"/> Canneries	<input type="checkbox"/> Grocery Store	<input type="checkbox"/> Pharmaceuticals
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<input type="checkbox"/> Freight Terminals		

Bulletins: MP-54, LR-54, 52-54

Rapistan® BETTER CONVEYING EQUIPMENT

CONVEYORS, gravity and power belt • INDUSTRIAL CASTERS • WHEEL EZY TRUCKS

Representatives in all Principal Cities Throughout the World

Circle No. 113 on Reader Service Card for more information

LETTERS

Continued

tories you think can handle our requirements.

Camargo Trading Company, Inc.

FLOW is always happy to pass along to its readers the names of manufacturers who can be of service. There are several companies which make machines to do the job described by our reader, and he has been advised accordingly.

Automatic "Flip-Flop"

To FLOW:

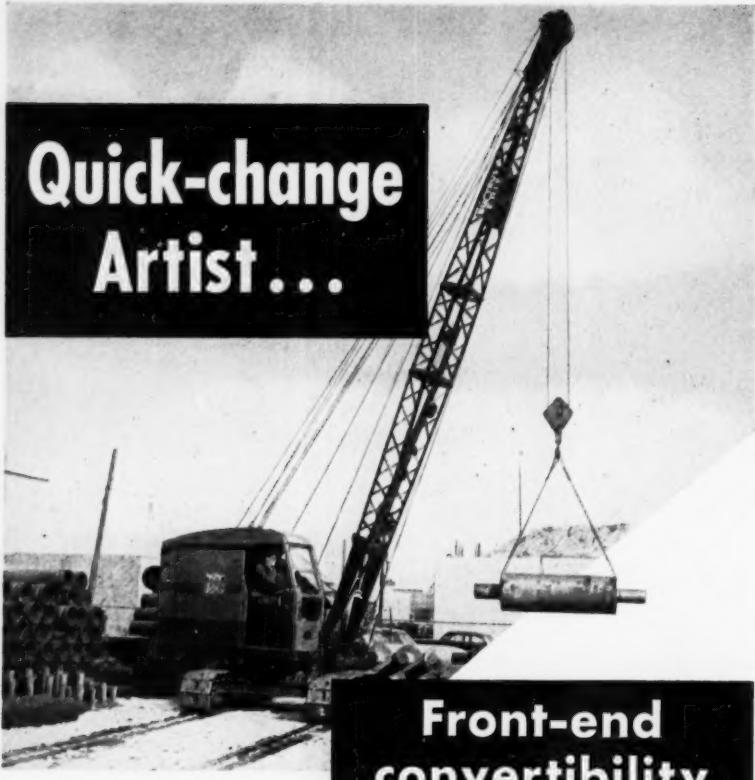
As subscribers to your publication, which we have at all times found most interesting and useful, we thought that you and your readers might be interested in a new device which we installed recently in our plant. It automatically turns cartons, with television sets, upside down for sealing of the bottom flaps. This device, which we laughingly call "flip-flop" has aided us considerably in production . . .

. . . We in the past have derived a great deal of benefits from a number of articles in your publication and therefore feel that you might wish to bring this particular phase of production handling to the attention of your readers. Should you be at all interested, please feel free to call on us and we certainly will be most happy to co-operate in any manner which you might see fit.

Benno Bordiga
Director of Manufacturing
Olympic Radio & Television Inc.

Reader Bordiga's letter was most certainly of interest to the editors of FLOW. As a result of it, Mr. Bordiga was contacted, and thanks to his excellent cooperation, FLOW readers will be able to benefit from Olympic Radio's ingenuity. The "flip-flop" which is referred to in Reader Bordiga's letter is featured as this month's Packaging & Shipping Idea of the Month. You will find it listed in the Table of Contents.

Quick-change Artist...



Front-end convertibility

is fast
and easy

on BUCYRUS-ERIE
CRANE-EXCAVATORS

With quick convertibility of front-ends, a Bucyrus-Erie Crane-Excavator can go to work on a wide variety of jobs in any industrial plant . . . loading and unloading . . . digging trenches and foundations . . . stacking castings, bar stock and other material . . . stockpiling scrap . . . setting structural members — any general construction and all-round yard work.

And whatever the job you get the same outstanding performance. On excavating, Bucyrus-Erie's perfectly balanced dig-swing-dump cycle delivers more dirt per hour. On crane work you get fine, smooth control to spot loads accurately without lost motion.

See your Bucyrus-Erie Distributor soon — he'll show you how a Bucyrus-Erie Crane-Excavator can reduce your material-handling and yard-work costs.

½-yd. 15-B • ¾-yd. 22-B • 1½-yd. 38-B
Shovel • Dragline • Crane • Clamshell • Dragshovel

**BUCYRUS
ERIE**

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Send for
this FREE
booklet
TODAY!

"Ways to Make Your Excavator Work
Harder, Longer"

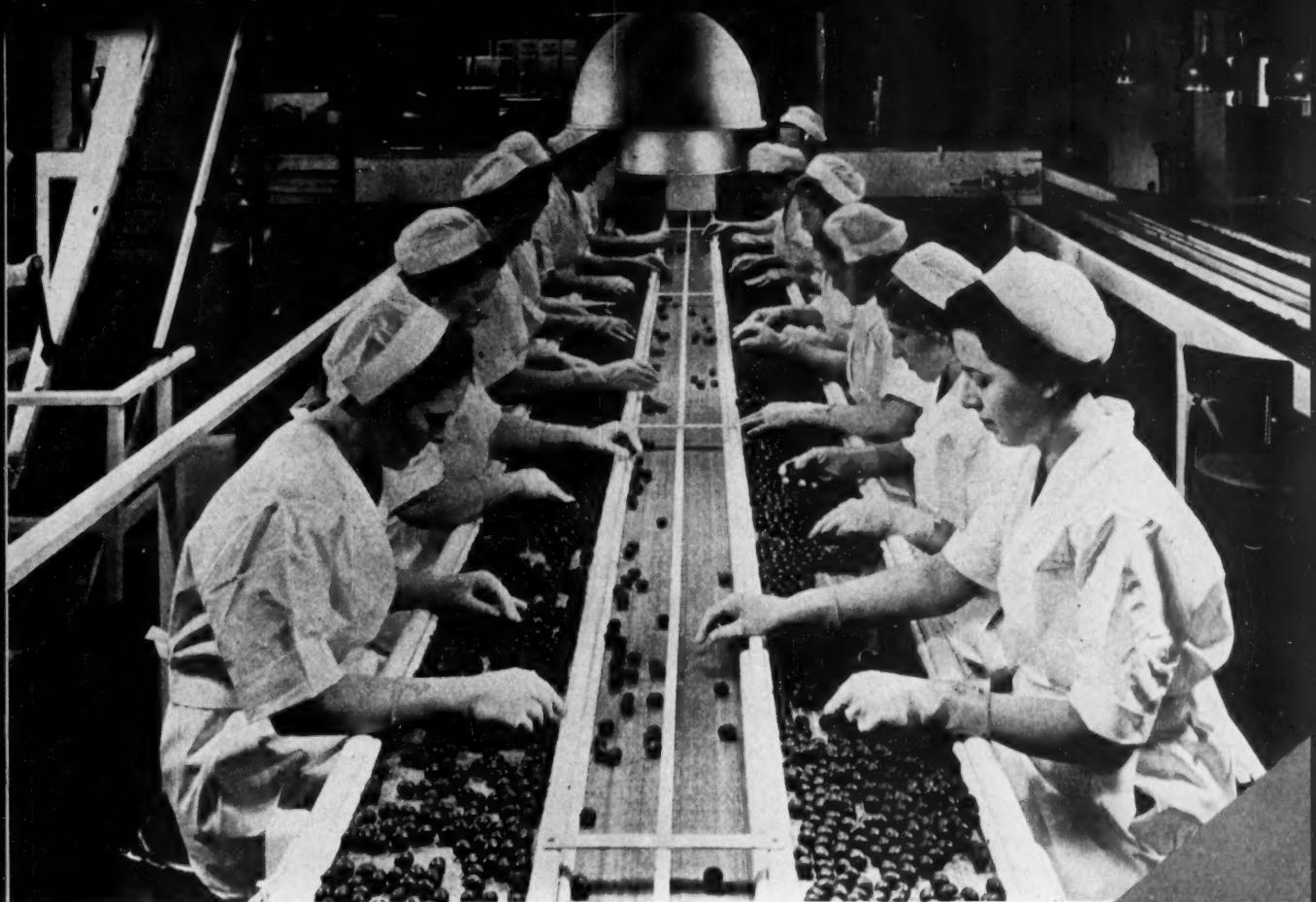
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Address.....
Company.....
City..... State..... 48E53

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10

FLOW • APRIL, 1954

Circle No. 127 on Reader Service Card →



LINDSAY RICE OLIVE COMPANY, LINDSAY, CAL.

Thermoid Conveyor Belting cuts handling costs on many types of jobs

There's a Thermoid Conveyor Belt designed to lower handling costs in every type of plant. Each belt is best suited for the particular type of service recommended. Take food processing for example: **CANNERS** (WC & PC)—For handling vegetables, fruit and other foods. Resists acids. Imparts no taste or odor. Available in white or peach color covers. **CANNERS C**—Ideal for use where food is not in direct contact with belt. For packages, waste and refuse; **RUFFTOP**—Thousands of irregular gripper points guide smooth surfaced articles up inclines to 35°.

These belts cut costs in the food industry. But no matter what you handle Thermoid Conveyor Belting will cut your costs... stay on the job longer... reduce down time. Your Thermoid Distributor can help you select the Conveyor Belt best suited for your requirements. If you prefer, write direct for Catalog 3679.



Canners
Type WC—white
Type PC—peach

Canners
Type C—black

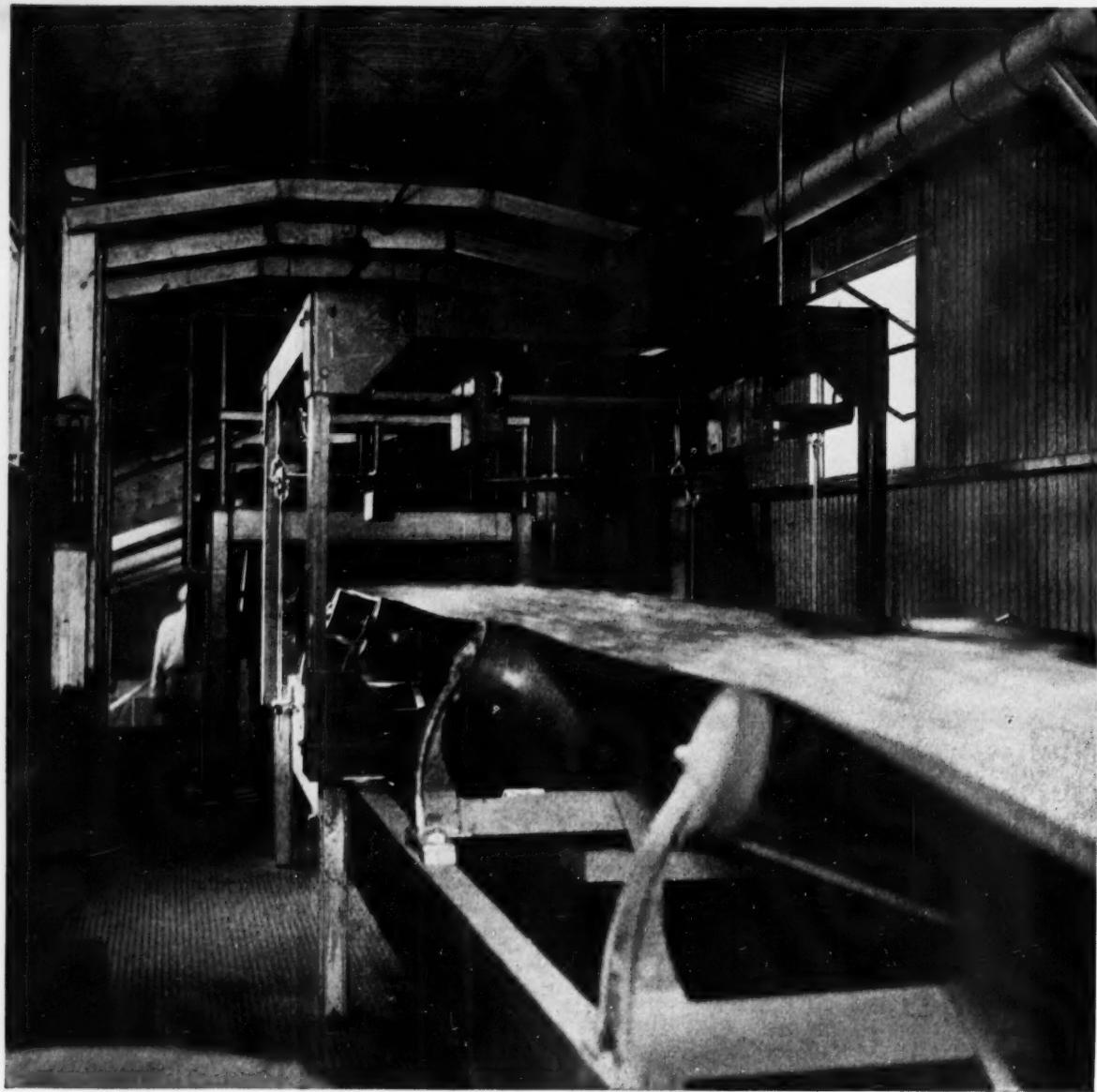
Rufftop

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

thermoid

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah



straight path to profit...

Materials make no stops . . . no detours . . . when weighed on a Fairbanks-Morse Conveyor Scale. Faster? Of course . . . and weights are recorded automatically . . . without a weigh man . . . without a chance for human error.

Like all Fairbanks-Morse scales,

the Conveyor Scale is a rugged, dependable instrument . . . skillfully designed and precisely manufactured for enduring accuracy . . . years of trouble-free operation.

For weighing chemicals, coal, wood chips, building aggregates . . . or any material best handled on belt

conveyors . . . a Fairbanks-Morse Conveyor Scale provides a fulfilling answer for reducing material-handling costs. See your nearby Fairbanks-Morse Weighing Expert, or write Fairbanks, Morse & Co., 600 S. Michigan Avenue, Chicago 5, Illinois.



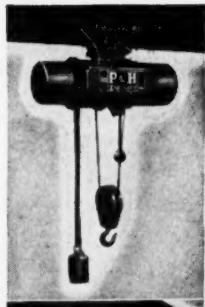
FAIRBANKS-MORSE

a name worth remembering when you want the best

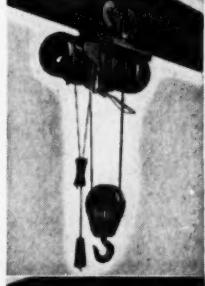
SCALES • PUMPS • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • FARM MACHINERY • MAGNETOS

Circle No. 57 on Reader Service Card for more information

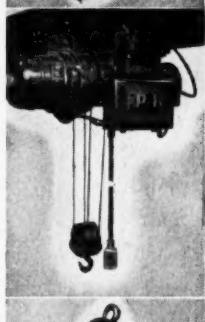
P&H Zip-Lift Electric Hoist (Pushbutton control)
Handy little power-house for loads from 250 pounds up to one ton. Versatile—in use in metal shops, dairies, hospitals, bakeries. Solves your load-handling problem within the weight limits specified. Plenty of literature available for more detailed information. Ask for it.



P&H Zip-Lift Electric Hoist (Rope Control)
You can do anything with the two rope controlled models that you can with the Pushbutton Zip-Lift. The less expensive rope control gives you a break on price—doesn't cut down the number of jobs you can perform. You get years of trouble-free service at an extremely reasonable initial cash outlay.

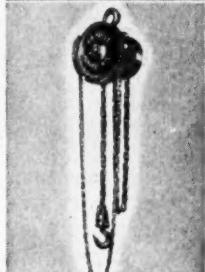


P&H Hevi-Lift
For heavy loads—and your own particular problem. The Hevi-Lift is a custom-built hoist—manufactured to your specifications. Over 3,000,000 variations possible on this husky load-handler. You're sure to find the right combination for you. Take a look at the literature available—then see your P&H distributor for a concrete solution.



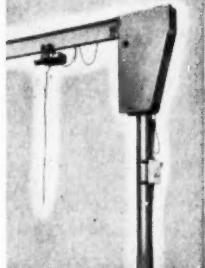
P&H Hand Chain Hoists

Perhaps you're in the market for a hand chain hoist; rather than wire-rope. If you are, you'll have to look far to find a better value than these P&H work-horses. Handle up to 25 tons easy as pie. Spur-gearred; Timken or roller bearing trolleys; Army-Type trolleys—whatever you need. Ask for literature on the complete line.



P&H Jib Cranes

Hang your hoist on a P&H Jib Crane—then you've got a dependable one-two combination working for you. Eight different models—bracket-type, mast-type and pillar-type. Capacities up to 12,000 pounds. Use the coupon for fast return of literature on the complete P&H Line.



This coupon gets you complete information on the P&H Hoist Line.

P&H
HOISTS

HARNISCHFEGER
CORPORATION
4643 W. National Ave., Milwaukee 46, Wis.



**Save
just three
minutes
per shift!**

... pay the operation cost
of a handy, rugged,

P&H
Zip-Lift
Hoist



Not three minutes per man... three minutes per shift!

THAT'S the experience reported by Evinrude Motors of Milwaukee, Wisconsin, world-famous manufacturers of outboard motors.

Here's how they explain it:

"A piece of labor-saving equipment which has played an important part in saving time and relieving our workers of repetitive lifting is the P&H Zip-Lift Hoist. We use 11 Zip-Lift Hoists in various testing, experimental and shipping rooms, in processing departments and on the loading platform. In every position they lessen the fatigue of the men and contribute to the high quality of our product.

"Surprising as it may seem, cost analysis shows that a P&H Zip-Lift Hoist of 500-pound capacity costs less than 18¢ a day to operate on two shifts. This unit makes it unnecessary for a second tester, for instance, to lend a hand in lifting a 15-hp or a 25-hp motor. Since each man earns better than 3¢ a minute, the saving of 6 minutes of lifting time in 12 hours pays for the day's operating cost, and the rest of the time is net gain . . ."

Want more proof? Then send for the complete story on how Evinrude utilizes these strain-saving hoists. Use the handy coupon below for prompt reply.

P&H Hoists

HARNISCHFEGER CORPORATION
4643 West National Ave., Milwaukee 46, Wisconsin

Gentlemen: Please send me the story on how Evinrude pays for its P&H Hoists by saving only three minutes per shift! I'm also interested in information on other P&H models checked: P&H Zip-Lift, Pushbutton Control , P&H Zip-Lift, Rope Control , P&H HeviLift , P&H Hand Chain Hoists , P&H Jib Cranes .

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

3005

Circle No. 61 on Reader Service Card for more information

FRIED Stripveyor Patented
makes sheet handling wholly mechanical

Pays for itself in less than 100 days

Automatically picks up cut strips, conveys them beyond shear bed. Makes shear 100% efficient. Adjustable to any height up to 45" - synchronous to shear speed - handles any gauge sheet up to $\frac{3}{8}$ ", widths as wide as allowable by standard 20" back gauge, lengths to size of shear. Portable! Caster-supported carriage supplied with floor locks.

SHEAR TO .005

FRIED Liftveyor Patented

Enables clean-cut wide shearing to .005" regardless of material. Eliminates flexing - supports sheet from underside while sheet edge is against back gauge - then conveys it beyond shear frame. For sheet or plate up to $\frac{3}{8}$ " thick.

FRIED STEEL EQUIPMENT MFG. CORP.
528 EAST 119th ST., NEW YORK 35, N. Y.

MODERN COAL AND ASH HANDLING SYSTEMS FOR MODERN PLANTS INCLUDE

Kalamazoo

VITRIFIED GLAZED TILE

INDUSTRIAL STORAGE SILOS

Coal stays dry, doesn't freeze, doesn't deteriorate. Expensive compaction operations required by outside storage are eliminated. Kalamazoo first cost is the *only* cost - no maintenance needed.

Bring your coal and other bulk storage problems to Kalamazoo - over 50 years' experience.

Bulletin 1153-B
gives you the
complete Kalamazoo story. Get
your copy today.



INDUSTRIAL STORAGE BIN DIVISION

Kalamazoo TANK and SILO COMPANY

431 HARRISON STREET . . . KALAMAZOO, MICHIGAN
Circle No. 80 on Reader Service Card for more information



. . . at The Thew Shovel Co.

The board of directors elected **A. C. Lundgren**, vice president. A director of the company and director of purchases since 1946, Lundgren will retain the responsibility **A. C. Lundgren** for procurement of materials. Active in civic and social affairs, he resides in Lorain, Ohio.



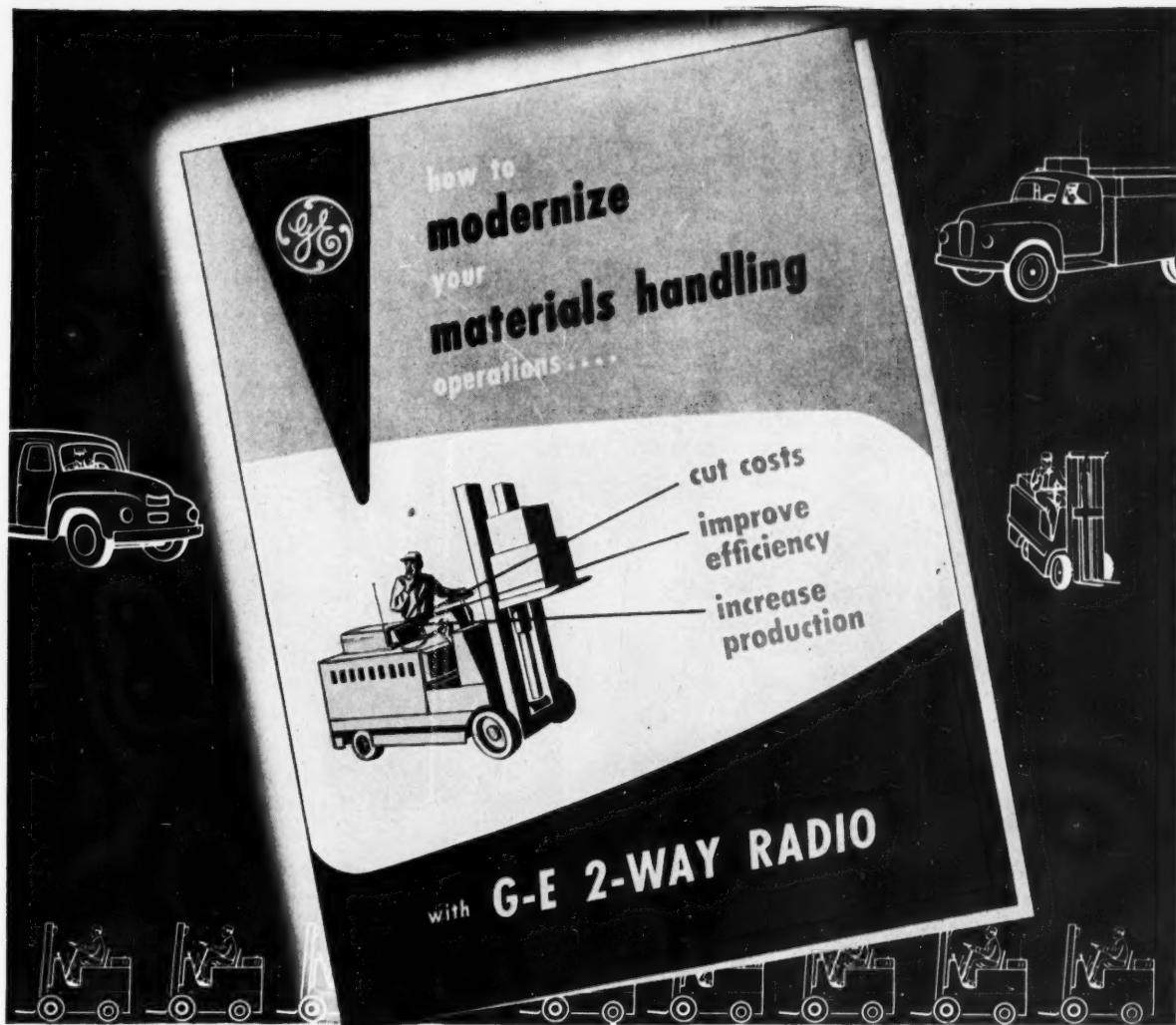
. . . at B. F. Goodrich Company, Industrial Products Division

Three new assignments have been made: **I. Newton Kimsey** has been appointed sales development manager, reporting to the vice president-sales; **John M. Cooney** has been named western zone manager; and **Harold L. Larson** has become manager of the Akron sales district. These three men have a combined service record with Goodrich of more than 70 years.

. . . at Minnesota Mining & Manufacturing Co.

Appointment of **Frank J. Vette** as assistant engineer of the company's adhesives and coatings division is announced. He joined 3M as a mechanical engineer in the abrasives engineering group in 1945, and has been design engineer of the adhesives and coatings division since 1948.

Also announced is the ap-



Whether you control **ONE** or **1000** trucks, **READ THIS BOOK!**

THE READING TIME you invest can pay a startling premium in materials handling experience! This concise booklet takes you into plants where radio is used . . . shows you what 2-way radio is . . . why it is currently revolutionizing old concepts of industrial production. In a quick, easy step you can parallel the success of these manufacturers to your activity. Devote seconds now to writing for this valuable story!

GENERAL  **ELECTRIC**

FLOW • APRIL, 1954

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-FREE-

General Electric Company, Section 3244
Electronics Park, Syracuse, N. Y.

Please send me a copy of the G-E booklet "How to Modernize Your Materials Handling Operations..."

NAME

COMPANY TYPE BUSINESS

ADDRESS

CITY STATE

MEN IN THE NEWS

Continued

pointment of **Robert C. Anderson** as assistant director of engineering for staff laboratories. Since 1949 Anderson has been assigned as a product engineer in the chemical engineering and staff laboratory engineering groups. He joined the company in 1947.

... at Yale & Towne Manufacturing Co.

Agence MAP of Paris, France, has been appointed European advertising and public relations representative, according to an announcement by Philip B. Niles, vice president. The agency is headed by **Philippe R. Fenwick**, who spent six weeks in this country studying Yale & Towne operations. The appointment of a European advertising and

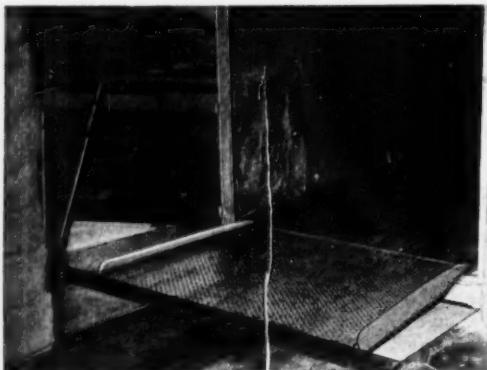
public relations agency is part of the company's current program of expanding its international marketing of material handling equipment.

... at American Chain & Cable Co., Inc.

New director of purchases is **Clifford G. Strote**, who succeeds **A. C. Curran**, resigned. Strote will direct purchases for all divisions and subsidiaries of the company, **C. G. Strote** with headquarters at Bridgeport, Conn. **M. C. Ness** has been appointed assistant director.

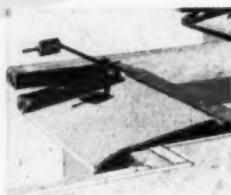


**The perfect
bridge between
truck and dock...**



RITE-HITE[®] ADJUSTABLE LOADING RAMP

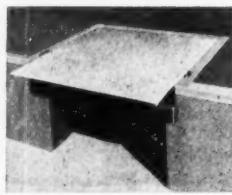
can solve many of your loading dock problems



PERMANENT-TYPE RAMP becomes an integral part of loading dock. Can be installed in new or existing construction at very low cost. Horizontal adjustment feature reduces truck maneuvering.



SELF-CONTAINED RAMP AND DOCK for non-permanent installation. Ideal for leased buildings — can be moved easily to new location. Horizontal adjustment feature reduces truck maneuvering.



FLUSH-TYPE RAMP for permanent installation. Can be locked in position flush with loading dock surface when not in use. Dock traffic can travel over it freely.

3 TYPES . . . EXCLUSIVE RITE-HITE PRECISION COUNTERBALANCE . . . no pipes, pumps, gears, motors . . . little or no maintenance required.

5 MODELS to choose from . . . 10,000 and 20,000-pound capacities . . .

Priced from \$395.00.

Plan now
to install
RITE-HITES . . .
write
Dept. F-44



RITE-HITE[®] DIVISION
LOOMIS MACHINE COMPANY
FOURTH AND PINE STS. • CLARE, MICH.

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... at The Colson Corporation

The promotion of **Lauren E. Wurster** to the post of treasurer is announced. He succeeds **A. L. Irish**, veteran senior vice president and treasurer, who retired December 31. Associated with Colson since 1924, Wurster is also a director of The Kasper Foundry of Elyria and The Cuyahoga Rivet Company of Cleveland.



... at Motorola

The promotion of **Harold A. Jones** to the position of executive assistant to the national sales manager is announced. The new post adds responsibility in national sales management to Jones' present direction of the two-way radio Technical Information Center. He will assist the national sales manager in sales and promotion management of all

SAVE UP TO \$1,000.00 ON YOUR NEXT GAS FORK TRUCK PURCHASE



BAKER "Yardloader" 4000 POUND CAPACITY

Here's a fork truck built for rugged outdoor service. Large pneumatic tires, exceptionally high ground clearance and oscillating rear axle permit its operation on unimproved or semi-improved ground surfaces. Powerful heavy-duty industrial engine, extra-heavy drive axle, and 4-speed transmission assure ample power for rough work. Travel speed approaching 14 MPH

in high gear enables it to cover large areas efficiently. It's safe and easy to operate, featuring convenient controls, automotive type steer and excellent driver visibility. Hydraulic lift permits stacking to 122 inches.

But the outstanding feature of the Yardloader is its amazing low price—about 25% under any other gas truck in its capacity.

**Get all the facts—and save up to \$1000.00
on your next gas fork truck.**

Send in this coupon today.

THE BAKER-RAULANG COMPANY
1219 West 80th Street • Cleveland 2, Ohio

*The Baker-Lull Corporation • Subsidiary, Minneapolis, Minn.
Materials Handling and Construction Equipment*

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FLOW • APRIL, 1954

TO THE BAKER-RAULANG CO., 1219 West 80th St., Cleveland 2, Ohio

Please send me information and specifications on the new
Baker EY-40 Yardloader which sells for only \$2985.00.

Name _____ Title _____

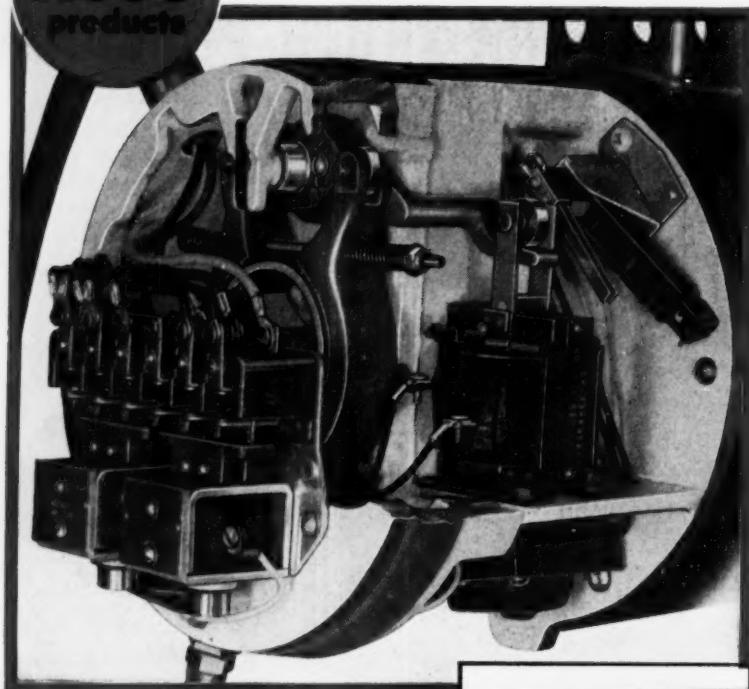
Company _____

Address _____

City _____ State _____



Wright Hoists



Redesigned for Full Accessibility

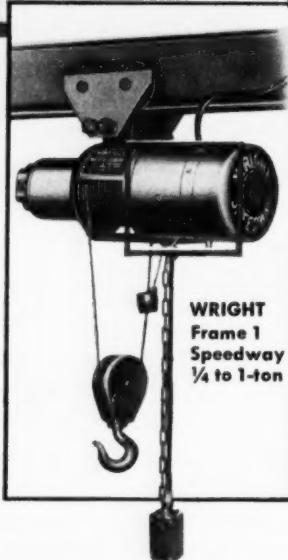
- This newly designed FRAME 1 WRIGHT SPEEDWAY offers fast adjustment, and low-cost maintenance.

Simple screw driver removal of the side cover exposes the limit switch, solenoid coil, and transformer (see picture). These important components *never* need adjustment. Note the ample working room when replacement of any of these units is indicated.

Equally simple screw driver removal of the end housing provides complete accessibility of the brake assembly and controller (see picture). Brakes are adjustable to two additional positions to compensate for brake lining wear by merely changing the position of one set screw.

PURCHASE PRICE + MAINTENANCE = TOTAL COST

The redesigned Frame 1 WRIGHT Speedway Hoists assure you maximum service and minimum maintenance time and charges . . . minimum down time . . . lowest total operating cost.



For the full story see your
WRIGHT HOIST Distributor, or write
our York, Pa., office for literature



Wright Hoist Division AMERICAN CHAIN & CABLE

York, Pa., Chicago, Denver, Detroit, Los Angeles, New York,
Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

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MEN IN THE NEWS

Continued

communications products distributed through this wholly-owned subsidiary of Motorola Inc.

Also announced is the appointment of **Lloyd P. Morris** as chief engineer of the National Radio Systems Consulting Service—a new Motorola service. Morris, with more than 13 years' experience in 2-way radio systems, is recognized as an authority in his field. His primary duties will be advising on engineering design of complex coordinated VHF point-to-point and 2-way radio systems for customers.

... at Electric Storage Battery Co.

The appointment of **Edmund J. Fitzmaurice, Jr.**, as sales engineering manager and advertising manager is announced. He was formerly a supervisor of railway and motive power sales for the company. In his new position, Fitzmaurice will be responsible for sales of all types of Exide industrial storage batteries.



E. Fitzmaurice

... at Evans Products Company

W. B. Gilkey has been named to the sales engineering staff of the Railroad Loading & Equipment Division. A veteran of three years' service with Evans, he formerly was with the James Verner Company of Detroit.

... at Hyster Company

Thomas R. Hazel has been appointed supervisor of the

Tractor Equipment Engineering Division and **Ronald A. Johnson** supervisor of the Engineering Standards Division. Hazel has been with the company for the past seven years while Johnson joined the firm six years ago.

... at Baldwin-Lima-Hamilton Corp.

Veteran newspaperman **Thomas J. Hunter** has been



appointed manager of the newly created sales promotion department at the Lima Works. In this position, Hunter will handle trade publication and newspaper publicity, sales aid material, edit a semi-monthly field paper and direct activities of the company's new sales training school. He was formerly business editor of The Lima News.

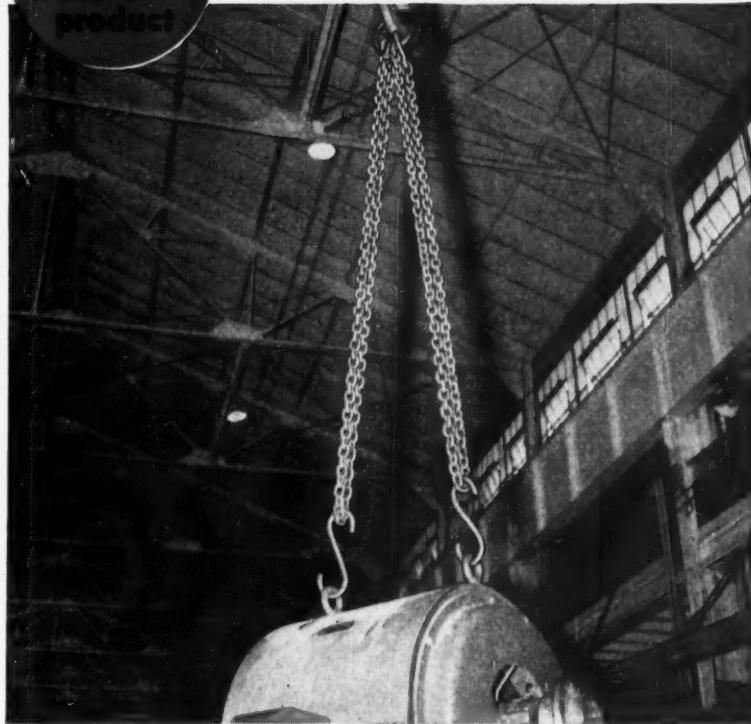
... at United States Spring & Bumper Co.

Patrick T. Rauen was elected to the position of vice president at the last meeting of its board of directors. Since graduating from the University of Southern California where he majored in Industrial Management, Rauen has been engaged in various phases of the company's manufacturing and sales activities.

... at Colt's Manufacturing Company

Richard B. Almy has been appointed advertising manager, according to **A. K. Masters**, director of sales. Almy will handle the advertising and sales promotion activities of Colt's Arms Division, Autosan Division, Packaging Machinery Division and Plastics Division.

ACCO Registered* SLING CHAINS



You get more than chain when you buy ACCO Registered Sling Chains

• This 125,000 psi ACCO Registered alloy sling chain has great strength, yet it's lightweight and easy for men to handle. It will lift a variety of expensive loads safely over costly machines. You can be sure of that because it's ACCO Registered.

ACCO Registered is more than a name. It's more than a registered trade mark of American Chain & Cable. It is the standard by which all other slings are judged. It means that you can equip your shop with dependable "lifting tools" specifically designed for highest efficiency and long life by trained engineers who spend all their time designing and testing slings.

A survey of your sling requirements will cost you nothing. See your ACCO Registered Sling Chain distributor today or write our York, Pa., office for details. *Trade Mark Registered



WHAT "ACCO REGISTERED" MEANS...

- 1 The best material
- 2 Unit safety factor (on bodies, rings, links, hooks)
- 3 Proof test of complete sling to twice the working load limit
- 4 Actual field service test of each design
- 5 Metal identification ring on each sling
- 6 Signed Registry Certificate with each sling

ACCO



American Chain Division
AMERICAN CHAIN & CABLE

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

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TIME

TO CALL A FIBRE SPECIALTY ENGINEER

*Better
Materials Handling
Equipment for
all Industry . . .*

Production line soft spots, as you know, cost considerable money, waste valuable time, and often contribute to product damage.

Plant efficiency starts with good equipment—this is particularly true in the vital handling and movement of your materials and products. So, if the situation above occurs in your plant, your *best* move is a "hurry-up" call for a Fibre Specialty Engineer.

Here's how he's equipped to help you. He'll offer a

broad line of standard or special equipment designed and built to overcome your materials handling problem efficiently and economically. He'll provide long experience in, and an expert knowledge of, modern materials handling methods.

Why not let Fibre Specialty Division solve your materials handling problem?

FIBRE SPECIALTY DIVISION NATIONAL VULCANIZED FIBRE CO.

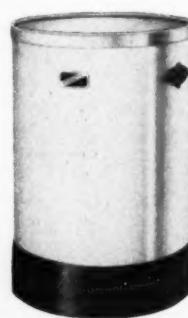
WILMINGTON 99, DELAWARE



THE LAST WORD IN TRUCKS. This tough, all-purpose streamliner has everything. It's light, strong, quiet, and smooth-running. Constructed of hard vulcanized fibre veneered to both sides of a waterproof core. Two-piece construction and rounded corners are only two of the many features that recommend the truck for a variety of jobs in many industries.



MOVE IT—STACK IT—STORE IT!—Here's a versatile materials handling system for many jobs. Tough, hard vulcanized fibre tote boxes—custom built for your job—loose-mounted on welded, all-steel, easy-rolling dolly trucks. A complete system adapted easily to many industrial applications.



DESIGNED FOR WORK! This heavy duty, hard vulcanized fibre, straight sided barrel fits in well most everywhere. In seamless construction up to and including 18" diameters, the model is available with turned fibre top illustrated or metal top ring as desired. Fibre kicking band insures long—hard service life. Metal reinforced hand holes and casters optional.



NEW FREE CATALOG No. 54 illustrates and describes in detail our wide range of equipment designed for better materials handling. Write for your free copy direct to Dept. L-4.

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We can **CUT** your **Bulk Material Handling Cost**



Let us prove . . . BY A
DEMONSTRATION . . . the many
advantages of loading with
the combination of
Clutch-Type Transmission and
Hydraulic Torque Converter . . .
brought to you by the

TRACTOMOTIVE **TL-10** **TRACTOLOADER**

push a lever to go forward,
pull it back for reverse. Reverse is almost
twice as fast as forward.

SEE how easy it is to maneuver the TL-10. Bucket over drive wheels utilizes weight of load for greater traction...eases weight on rear steering wheels. Turning radius is only 11 ft. at tip of bucket . . . works in areas that would normally accommodate only lower capacity machines. You can turn from a 9-ft. aisle into a 10-ft. bin!

Only by watching the TL-10 work can you fully realize the great savings you can make on bulk material handling. Let us arrange a demonstration NOW! Wire, write or call.

Never-Anywhere - A WHEEL LOADER LIKE THIS!

3/4 cu. yd. bucket — weight 11,400 lb. — 63 brake hp.
Has dynamic, new Allis-Chalmers POWER-CRATER engine . . .
gives you high-octane performance on regular gasoline.

POWER-CRATER is an Allis-Chalmers trademark.

Added Versatility Standard bucket is quickly
interchangeable with Lift Fork, Crane Hook, Dozer
Blade or a 1 1/2-yd. Light
Materials Bucket. Each
conversion adds to usefulness of the TL-10.



Write to us —
for literature on the TL-10
and see your nearest
Allis-Chalmers
Industrial Tractor Dealer.

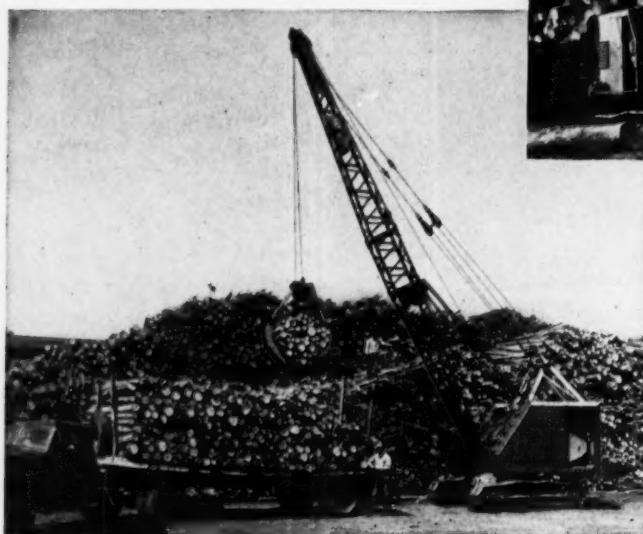
TRACTOMOTIVE

TRACTOMOTIVE CORPORATION, DEERFIELD, ILLINOIS

Tracto-Loaders • Tracto-Shovels, Side Booms and Hydraulic Rippers
for Allis-Chalmers Crawler Tractors • Loader and Shoulder Maintainer
for Allis-Chalmers "D" Motor Grader

what is your handling problem?

The yard handling problems of industry are many and varied. Here, for instance, a $\frac{3}{4}$ yard BAY CITY crane has solved a pulpwood and log handling problem. Hundreds of other yard handling problems are also being solved daily by BAY CITY cranes . . . and at low operating and maintenance costs, too!



The BAY CITY is a rugged, heavy-duty machine that is engineered for continuous high production and built for long life. It includes many outstanding features. Tandem drums give straight cable lead. Power booster clutches provide easy operation. Helical gears are quiet and smooth running. Long, wide crawlers provide a firm, solid foundation. Yes, no matter what your materials handling problem may be, it will pay you to ask your BAY CITY Dealer for complete details.

BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

Write for these catalogs describing BAY CITY Crawlers of $\frac{1}{2}$ yards and up or BAY CITY CraneMobiles and CraneWagons in capacities to 25 tons.

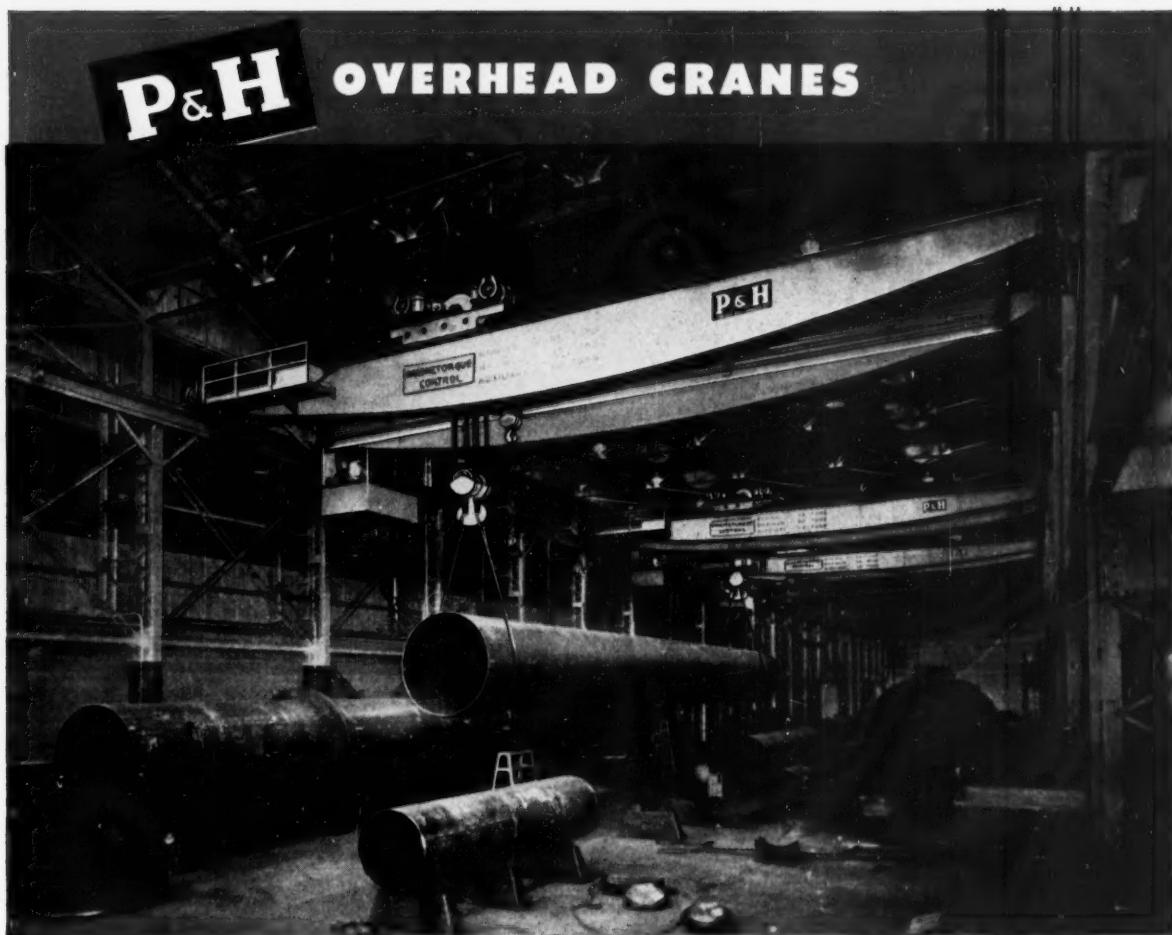
BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAM SHELLS

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P&H OVERHEAD CRANES



P&H Magnetorque® (AC crane control)

... Outstandingly Successful
in more than 900 installations

Right from the start, P&H Magnetorque was hailed as one of the most important crane developments in 25 years. And so it has proved to be! Since it was introduced in 1947, more than 900 Magnetorque installations have been put on P&H Cranes. *And every single one is successful!*

Magnetorque AC Crane Control, developed and perfected by P&H, gives you the finest control ever devised with the

economy and convenience of AC power. It gives you better performance — *proved performance!* And far lower maintenance costs. Remember, P&H electrical equipment is *designed and built* for crane service — *not adapted for it!*

If plant expansion or modernization is in your program, review your crane problems with P&H at the earliest planning stages.

P&H OVERHEAD CRANE DIVISION

HARNISCHFEGER CORPORATION

MILWAUKEE 46, WISCONSIN

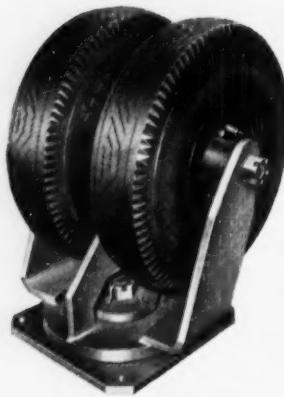


Just off the press
— a new 24-page
bulletin on
Industrial Cranes.
Ask for Bulletin C6-3.



Circle No. 75 on Reader Service Card for more information

300 to 4000 lbs!



ON ALBION'S HIGH-CAPACITY PNEUMATIC TIRE CASTERS

Albion's high-capacity, full pneumatic tire casters are available in a wide range of practical sizes and types as swivel or rigid models...single or dual wheel units to match any load capacity requirements.

They offer the maximum in both floor and load protection, smoother handling, quiet operation, safety and longer caster life. Their economical cost will amaze you. Inquire and see!

SEMI-PNEUMATICS, Too!

Albion's Semi-Pneumatic Tire Casters are also immediately available...as single or dual wheel units, rigid or swivel models, in sizes and capacities to meet your specifications.

DON'T FORGET...ask for your copy of Albion's big illustrated catalog...it's yours for the asking.



Represented in
Canada by
C. J. McDONALD
Rear, 1564 Queen's
Street, West, Toronto

**ALBION
INDUSTRIES, INC.**

ALBION, MICHIGAN

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24



The Materials Handling Equipment Co., Inc., with main offices at 450 Houston St., N.E., Atlanta, has been named to represent Easiquip Company in the states of Georgia, Florida, Alabama and South Carolina. Founded in 1945, the firm was recently reorganized.

R. L. Totten

Robert L. Totten is president and John M. Carney sales manager. Known throughout the South as "MAHECO", the company also represents Buda, Crescent, Fairbanks, Bassick, Mathews and Timber Products, among others. Complete parts and service facilities are featured by the firm.



Gould-National Batteries, Inc. has established a Philadelphia service station at 4225 North 16th St., with Perry Maull serving as manager. Company-owned and operated, the new facilities are said to duplicate those offered in San Francisco and Dallas.

W. D. Ellis will establish permanent residence in Sao Paulo, Brazil, as a result of his recent appointment as manager of South American Sales for the Baldwin-Lima-Hamilton Corporation, Construction Equipment Division. Associated with LIMA since 1948, for the past two years he has served as Export Sales-Service

FREES POWER TRUCKS FOR TIERING!



RAYMOND



*Lightweight
HAND PALLET TRUCK*

● Why tie up power trucks on jobs that can be handled by a RAYMOND Lightweight Hand Pallet Truck! Use this 2,000 lb. capacity truck for all your short hauls...and to ease rush hour handling.

● The RAYMOND Lightweight is the sturdiest hand pallet truck on the market! Its one-piece welded forks have 1/3 more strength than bolted forks found on "similar" trucks. Ram pistons, axles and lever shafts are made of heat-treated alloy steel. Pump piston is heavily chrome-plated to prolong pump life and prevent leakage.

● This truck is highly maneuverable in cramped areas due to its light weight and 270° steering arc. It offers effortless pallet entry, foot-pedal operation...has rugged reinforced handle and dual-purpose brake.

● **SEND FOR CATALOG** See the complete line of RAYMOND Hand Pallet Trucks before you buy additional equipment. Mail coupon for new catalog today.

The RAYMOND CORPORATION
3332 Madison St., Greene, N.Y.

Please send me your new Hydraulic Equipment Catalog.

NAME _____ TITLE _____

COMPANY _____

STREET _____

CITY _____ STATE _____

Circle No. 166 on Reader Service Card

FLOW • APRIL, 1954

Engineer for the company. He also served as a civilian U. S. Army consultant in England and Germany following World War II.

Clark Equipment Company announces the appointment of Dudley A. Burnett and Marshall O. Nystrom as district



D. A. Burnett



M. O. Nystrom

managers of the Construction Machinery Division. Burnett will represent the company in the South, Atlantic Coast and New England districts, while Nystrom will supervise the eleven western states, plus Oklahoma, and Texas. Both men were formerly with the Frank G. Hough Company.

Forty-seven central states salesmen representing the E. W. Buschman Company attended a two day sales meeting in Chicago recently. The meeting was conducted by Otto Svoboda, sales manager of this conveyor manufacturer.

Feedrail Corporation has appointed M. B. Squires Company its Pittsburgh representative. The firm's offices are located at 1202 Grant Building, Pittsburgh.

The Chicago franchise representative of Automatic Transportation Company, P. W. Voss and Associates, has appointed Edgar L. Schultz as sales manager. He formerly served the firm as a salesman and supervisor of the company's power sweeper division.



ELECTRIC INDUSTRIAL TRUCKS • HYDRAULIC ELEVATING EQUIPMENT

The RAYMOND CORPORATION

3333 Madison St., Greene, N.Y.

Please send me latest Reach-Fork Bulletin.
 Please have a Raymond representative call.

NAME _____ TITLE _____

COMPANY _____

STREET _____

CITY _____ STATE _____

Circle No. 165 on Reader Service Card for more information

The 2-way Mobile Radio with a thousand uses!

IT'S THE BENDIX

"MULTI-MASTER"

- The Bendix "Multi-Master" can be used as a fixed station.
- It can be used as a mobile unit.
- Easily adapted to narrow band operation.
- It works on either AC or DC current.
- It is available from 2½ to 60 watt output.
- Pull up . . . pull out . . . or pivot for easier servicing.
- It can be transported from one location to another.
- It can be transferred from one vehicle to another.

It's a new, clean and rugged design. Light in weight, compact. All controls mounted on front panel.

The Bendix* Multi-Master incorporates all the new and outstanding features of Bendix 2-way radio. It has range and power. Static free reception. Longer life components. Low power drain.

Bendix offers a complete line of accessories from hand sets to speakers, antenna to shock mounts . . . plus all technical help in obtaining license and complete system engineering.

It costs no more to own the best . . . so look at Bendix Radio before you buy. For complete details and specifications, write today to the address below.



BENDIX RADIO
2120 North Charles Street
Baltimore 18, Md.

Please send me further information on the Bendix "Multi-Master."

Name . . .

Address . . .

City Zone

State

Company Position

BENDIX RADIO

A DIVISION OF BENDIX
AVIATION CORPORATION
BALTIMORE 4, MARYLAND

Export Sales:
Bendix International Division,
205 E. 42nd St.,
New York 17, N. Y., U. S. A.

West Coast Sales:
10500 Magnolia Blvd.
North Hollywood, California
Canadian Distributor:
Aviation Electric, Ltd.,
200 Laurentian Blvd., Montreal, Quebec

*Reg. U. S. Pat. Off.

Bendix Radio

Circle No. 21 on Reader Service Card for more information

SERVICE
*...introduces a
superior truck*

**TO SAVE
YOU MONEY**

"**THE
Handler**"

*First proven gasoline
powered Lift-Truck with hydraulic
drive*... and hydraulic control*



JUST ONE LEVER

✓Shifts ✓Lifts ✓Brakes



The simple movement of this
one lever automatically
shifts from low to high and high to low
... two speeds forward and two speeds
backward!

By simply raising the control lever the
Handler's power load-lift goes into action.
No time lost hunting other controls.
Completely modern.

"Dead man" brakes—always more
safe. And on the Service Handler they
are automatically applied the instant
the operator lets go the control handle or
steps off the truck.

And REMEMBER... INSTANTANEOUS
REVERSING WITHOUT SHIFTING OR
ROTATING THE POWER UNIT.

The new Service Handler is the ultimate in rider-type powered lift trucks. Its economical and efficient 6 h.p. gasoline engine has the power and stamina to keep the brawny Handler performing around-the-clock, at startling savings. And it's easy to service. All working parts are accessible in seconds by simply unsnapping the hood.

SERVICE
CASTER & TRUCK CORP.
ALBION, MICHIGAN • SOMERVILLE, MASSACHUSETTS

Manufacturers of CASTERS • WHEELS • TRUCKS
LIFTERS • LIFT TRUCKS • SPECIAL EQUIPMENT

Circle No. 120 on Reader Service Card for more information

FLOW • APRIL, 1954

RIDER-TYPE—means covering the plant in
quicker time, reducing the overall cycle time.

*Patent Applied for



SERVICE CASTER & TRUCK CORP.
ALBION, MICHIGAN

Please quote prices on () SERVICE HANDLERS with
platforms of () size. Have salesman call ().

COMPANY _____

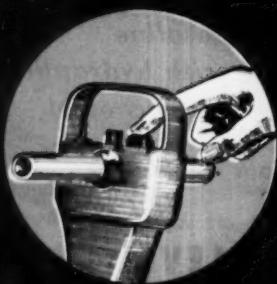
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CITY _____ STATE _____

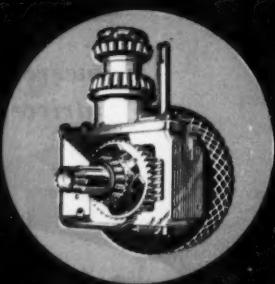
INDIVIDUAL _____

4 More Big Reasons

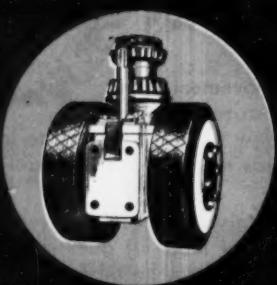
why you should buy a
Hydrolectric LIFT TRUCK



COMPLETE CONTROL
at your finger tips



SEALED ALLOY GEAR DRIVE
for long service life



TWIN DRIVE WHEELS
with differential for ease of
steering and good stability



HEAVY DUTY MOTOR
completely enclosed—highly
efficient easy accessibility



Compare the Hydroelectric features with any other "Driver Lead" Lift Truck. The Hydroelectric quality of construction merits your inquiry. Two driving wheels instead of one—50% easier steering—ease of maintenance.

Write for Catalogue 35 today showing various models and their features.

NOTE: The Dyna-Dual Power Unit is interchangeable on all models.

LIFT TRUCKS
INCORPORATED

2423-31 SPRING GROVE AVE.
CINCINNATI 14, OHIO



There is a model for every purpose to handle any kind of material.

Circle No. 84 on Reader Service Card for more information

**HIGHLIGHTS
of the month's
NEWS**

SOME of the finest brains in the packaging industry will be in Atlantic City this month at the 23rd National Packaging Exposition and Conference, to be held in Convention Hall April 5 to 8. Sponsored by the American Management Association, the Exposition itself is expected to attract more than 35,000 business and industrial executives who will view the products and services of some 400 exhibiting companies.

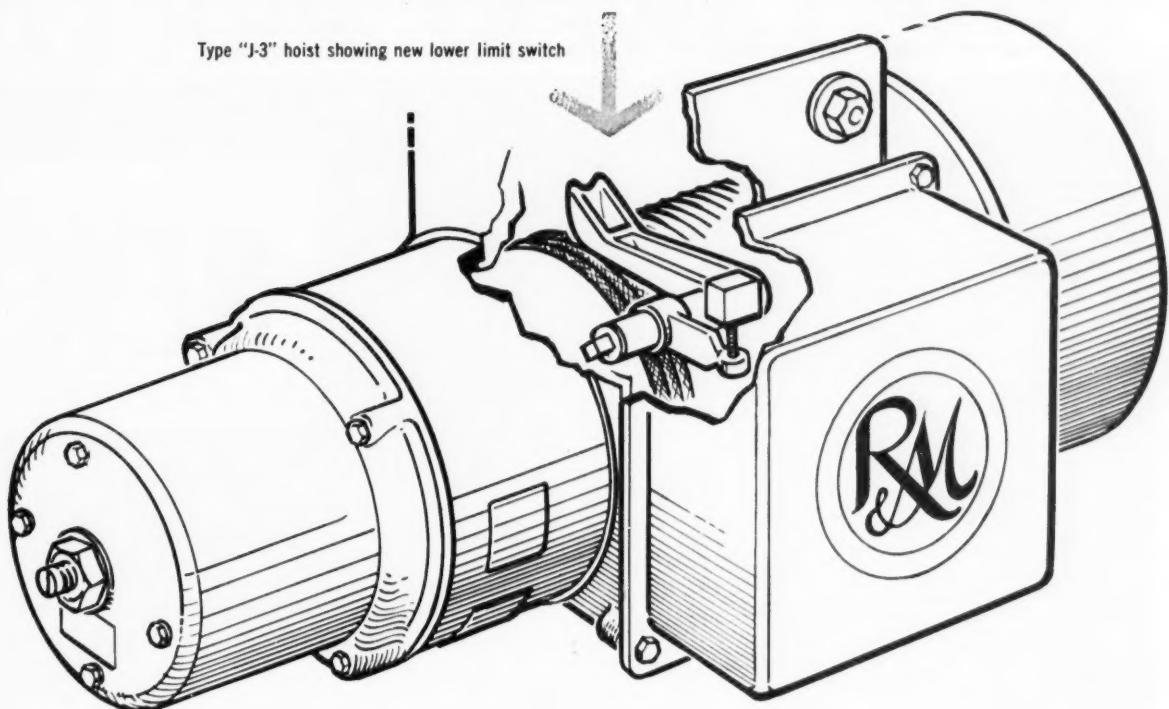
Among the highlights of the conference program will be case-study reports by three major companies: Sears, Roebuck & Company, Kraft Foods Company and Monsanto Chemical Company.

Sears executives will describe improvements introduced recently when their entire packaging activity was reorganized, and will discuss unusual discoveries they made. Research will be the subject of the Kraft presentation, by executives of this company's packaging research section. Monsanto speakers will outline the firm's complete packaging program, showing how each department—from product development through production, warehousing, engineering and sales—contributes.

In conjunction with the show, FLOW has developed a special Packaging and Shipping Section for this issue. "Packaging Is More Than Skin Deep" is the theme of the section, and three major aspects which bear out this contention are: packaging provides product protection during handling and shipping operations, good packaging improves handling efficiency and, lastly, it can increase high-speed production by being a part of handling.

And—as an additional special feature—the balance of this month's editorial coverage is devoted to principles and applications of efficient warehousing.

Type "J-3" hoist showing new lower limit switch



new

HELP FOR YOUR LIFTING PROBLEMS

That's the Robbins & Myers J-3 electric cable hoist, new from trolley to hook block. Designed to provide maximum economy for your investment, the J-3 fills the gap between lower cost electric chain hoists and costlier heavy-duty models. It's field proven and backed by R&M's reputation for quality. Buy the J-3 for those two-ton handling jobs for which you've wanted the advantages of an electric cable hoist.

Check these features—new lower limit switch leaves two wraps of cable still on the drum, never

lets the load hang from the cable anchorage—heat treated alloy steel helical and straight spur gears—machine grooved drum allows 18-foot lift without overwind—cast aluminum alloy frame—anti-friction bearings throughout—two horsepower high torque R&M hoist motor—Weston-type load brake—magnetic disc motor brake—single speed push button control is standard, two speed available—lug mounting, or plain, geared, or motor driven trolley—2000 or 4000 pound capacity models.

Now you can buy a two-ton cable hoist for as little as \$725.00!

take it up with

ROBBINS & MYERS, INC.

SPRINGFIELD, OHIO



VENTILATORS



MOYNO PUMPS

BRANTFORD, ONT.



HOISTS



CRANES



MOTORS



FANS



clip
staple to letterhead
add name & title

Have representative call
Send J-3 bulletin No. 890

FLOW

THE LOWEST PRICED

NEW



The new LEADER in LOADERS—only \$3395.00

Here it is—the new 12-cubic foot, Model 20 Baker-Lull SHOVELoader—the ideal *low-cost* answer to mechanization of bulk material handling.

Shoveloader Model 20 actually costs less than a year's pay for a laborer with a hand shovel! The low price is made possible by utilizing a mass-produced "power package"—including engine, transmission and drive axle. This saving to us is reflected in the extremely low selling price, *without sacrificing quality*.

Model 20 is designed and engineered for fast, efficient large volume performance. Although priced \$350 or more under any other loader in its class, we ask that you compare it with the highest priced—using any standards you wish.

Compare its construction of highest quality materials and components. Compare its proven,

dependable power unit, made for us by a leading builder of gasoline tractor engines.

Compare it for performance. Compare its 7-foot lifting height and 1500-lb. load carrying capacity with other makes. Compare it for speed: top travel speed 14 mph. Compare the natural and easily controlled bucket action for efficiency in digging, loading and carrying.

Compare for operator safety and convenience. Operator has full 360° visibility at all times. Moving bucket arms are always *in front* of him, instead of moving up and down beside him where they obstruct vision and are a constant hazard to life and limb.

Compare for versatility. Model 20 Shoveloader gives you top bulk handling efficiency for light materials, heavy loads or loads varying from light to heavy. It easily switches to lift forks, special buckets or crane hook attachments to perform many other jobs in your plant.

Circle No. 15 on Reader Service Card for more information

LOADER IN ITS CLASS

Baker-Lull model 20 **SHOVELoader**



UNLOADS BOXCARS: The maneuverability of Shoveloader Model 20 makes it ideal for unloading bulk materials such as foundry sand, dry chemicals, fertilizers, etc., from box cars with 6-foot doors.



HANDLES COAL: Shoveloader Model 20 saves many man hours in coal handling operations. Full hydraulic control of bucket means safe operation in close quarters.



BETTER DIGGING ACTION: Tiltback of bucket at ground level of 15° and automatic scooping action as lift arms are raised, provide the natural, easy digging and full-bucket operation that pays off in more work per hour.



LIFTS HIGHER—DUMPS HIGHER: Model 20 Shoveloader's 7-foot lifting height permits charging of high hoppers and better use of bin space by higher piling. Loading out scrap and loading high truck bodies is no problem.



LIFTS 1500 POUNDS EASILY: Lifting and carrying capacity of $\frac{3}{4}$ tons of material is about 500 pounds higher than most loaders in this class. Greater forward reach—full 48 inches ahead of front tires—means better positioning of loads in truck loading and piling.

THE BAKER-LULL CORPORATION *Formerly the Lull Corporation*

346 WEST 90th ST. • MINNEAPOLIS 20, MINN.

A Subsidiary of The Baker-Raulang Company

THE BAKER-LULL CORPORATION,
346 West 90th Street • Minneapolis 20, Minn.

Please send full information on the Baker-Lull, Model 20,
12 cu. ft. SHOVELoader which sells for only \$395.00.

NAME.....

COMPANY.....

ADDRESS.....

CITY..... STATE.....

NEWS VIEWS TRENDS

M.H.I. TRAVELING CLINIC IN CHICAGO

April 15 is the date, and the Congress Hotel in Chicago is the place of the M.H.I. Traveling Clinic. Beginning at 9:00 A.M., some 25 leaders of the Material Handling Institute will discuss different vital phases of the industry. This all-day problem clinic is being sponsored by the Chicago Chapter of the American Material Handling Society. Reservations should be made no later than April 8, and should be addressed to the Material Handling Society, 53 W. Jackson Blvd., Chicago.

RAPISTAN BUYS KEYSTONE INTEREST

The Rapids-Standard Company recently purchased an interest in The Keystone Conveyor Company of Detroit. New name of the Detroit firm will be Rapistan-Keystone, Inc. The management and sales organization of the company will remain unchanged except for the addition of Nathan C. Snyder as Secretary and Eugene Hummel as Treasurer.

FLEXA STEEL MOVES

The new general offices and warehouse facilities of Flexa Steel Products Company are located at 17 North May Street, Chicago, Illinois.

CLARK STILL EXPANDING

Construction has begun in Benton Harbor, Michigan, of a new assembly plant for Clark Equipment Company. This 145,000 square-foot building will be used for the manufacture of a new line of Clark tractor shovels and for the assembly of power shovels being made in the present Benton Harbor plant. The new products, to be marketed under the "Michigan" trade name, will be assembled at the company's Buchanan plant until the latter part of this year, when the new facility is expected to be completed.

ATOMIC ENERGY AT CATERPILLAR

Plans to use the products of atomic energy in research work have been announced by Caterpillar Tractor Company. Radioactive materials will be used to accelerate longtime endurance tests on parts, and are expected to give test results not obtainable by more conventional methods. Parts tested will be sent to Oak Ridge to be made radioactive. Caterpillar's first step in working with atomic energy will be to use comparatively low levels of radiation intensity.

\$500,000 PURCHASE MADE BY HEPPENSTALL

As part of a \$2,000,000 expansion program, the Heppenstall Company has purchased the former Chapman-Price steel plant in Indianapolis. The reported price was \$500,000. The newly-acquired plant consists of six manufacturing buildings and a two-story office building, with 190,000 square feet of floor space under roof. The main plant and offices of Heppenstall are located in Pittsburgh, with other facilities being in Bridgeport, Conn., New Brighton, Pa. and Detroit, Mich.

7

THRIFTY WAYS to move materials faster!

1



MODEL 225 CONVEYOR COMBINATIONS. Drives, belts and accessories designed to your individual needs. Simple to assemble, move, lengthen or shorten.

2



MODEL TST-10 BULK TRANSPORT BODY. For dry powdered materials. High tensile alloy steel, electro-welded construction. 9-inch twin auger discharge. All controls outside body. Lengths 9-35 ft.

3



MODEL Q-51 SCREW CONVEYOR. For materials that roll or become fluid in motion. Underbin or undertrack screw loader easily attached. 10 to 60 ft. lengths. Portable or permanent installations.



BAUGHMAN
CONVEYING EQUIPMENT

4



MODEL 230 PORTABLE CONVEYOR. Contour troughing. No idlers. Perfect portable conveyor for all lightweight materials.

5



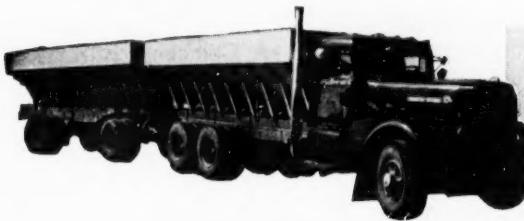
MODEL 195 CAR UNLOADER. Arched delivery. Unloads from full length of car. This horizontal section permits full opening of car hopper doors.

**Move it Faster for Less
with BAUGHMAN...
"The Thriftiest name in
Materials Handling."**



MODEL 175 BELT AND BUCKET ELEVATOR. Fully enclosed. Centrifugal discharge for permanent or temporary installations.

7



MODEL ASK-3-8 SELF-UNLOADING SPREADER BODY. Truck or Trailer Mounted. Equipped with drag chain and flight conveyor discharge and complete distributor and fan assembly.



BAUGHMAN MANUFACTURING CO., Inc.
106 Arch St. • Jerseyville, Ill.

Write for More Details!

Baughman Mfg. Co.
Information Service Dept.
Jerseyville, Ill.
Gentlemen: Please send me further information:

Name _____
Company Name _____
Address _____
City _____ Zone _____ State _____

Circle No. 19 on Reader Service Card for more information

Continued

OSGOOD COMPLETES THREE YEAR PROGRAM

The third step in a corporate reorganization program started three years ago by the Osgood Company of Marion, Ohio, has now been accomplished by the purchase of all the capital stock of The General Excavator Company. This move toward consolidation began in October 1950 by combining the sales divisions of the two companies for marketing their products under the name Osgood-General. In 1952, the second step took place with unification of field-service operations. The reorganization will not affect the sales and service policies or functions of Osgood-General. Officers of the company are: Robert C. Owens, president; Ben T. Wiant, vice president and treasurer; Edgar W. Barnhart, vice president and secretary; and John F. Lacey, vice president for foundry operations.

MECHANICAL HANDLING GOES CANADIAN

Manufacturing facilities have been established in Windsor, Canada, by Mechanical Handling Systems, Inc. President W. V. Casgrain said the move was made to enable Canadian Mechanical Handling Systems, Ltd. to serve its many customers better. The Windsor plant will begin with the design and manufacture of engineered conveyor systems, package handling units and tubular storage racks. Eventually, an all-embracing service will be developed.

NEW ENTRANT IN SWEEPER FIELD

A new company, Line Manufacturing, Inc., which has been formed in Los Angeles, will devote its entire facilities to the manufacture of industrial power sweepers. Headed by R. J. Lison, the company's staff is said to include several of the foremost names in the designing, engineering and sales field of power sweepers. National distribution of the six models now being offered will be through authorized factory trained dealers.

ROBERT GAIR ACQUIRES ANGELUS PAPER BOX

With 33 mills and plants located in the eastern and middlewestern United States and Canada, the Robert Gair Company, Inc., recently purchased manufacturing facilities in California. The firm purchased was the Angelus Paper Box Company of Los Angeles, at a reported price of \$3,618,000. The business will operate as a division of the Robert Gair Company, Inc.

MATHEWS CONVEYER INCREASES FACILITIES

Approximately 25,000 square feet are being added to the present manufacturing area of the Mathews Conveyer Company, Ellwood City, Pa. The building will contain the executive offices of the company, in addition to the purchasing, order, sales, accounting and research departments, as well as proposal and detail engineering groups. Also planned is a considerable expansion of the conveyor assembly department, which will allow more available space for all manufacturing operations.

NEW REYNOLDS PLANT IN OPERATION

Production is now underway at the new Reynolds Metals Company plant in Arkadelphia, Arkansas. This aluminum reduction plant, named in honor of the company's late vice-president and director, Robert P. Patterson, has an annual rated capacity of 110 million pounds of virgin aluminum. Built at an estimated cost of \$34 million, the plant will employ about 400 workers when it reaches full production.

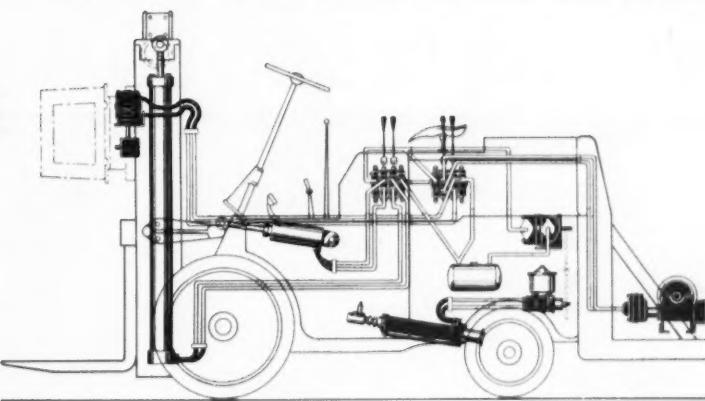
VICKERS

HYDRAULICS

The MARK of

SUPERIOR MATERIALS HANDLING EQUIPMENT

Fork lift truck uses Vickers Hydraulics in one circuit for lift, tilt, roll-over, and winch operation. A separate circuit provides Vickers hydraulic power steering.



ASK FOR NEW
BULLETIN M-5101

"Vickers Hydraulics" on materials handling equipment denotes superiority in two ways: First, the maker has obtained the benefits of the best in hydraulic equipment. Second, such care in the selection of hydraulic units generally denotes good design and careful construction throughout.

Among the important advantages of Vickers Hydraulics are simplicity of hydraulic design and of installation, complete flexibility of control, inherent protection against abuse and overloading. For further information get in touch with your nearest Vickers Application Engineering office.



Vickers Pump for Hydraulic Power Steering

This pump is vane type, hydraulically balanced, and has automatic wear compensation. Series VT4 has integral volume control and relief valves and oil reservoir.



Vickers Pumps (Single and Double)

Balanced vane type pumps that automatically maintain optimum radial and automatic running clearances over complete pressure range and throughout pump life. The result is long life and maintained high efficiency.



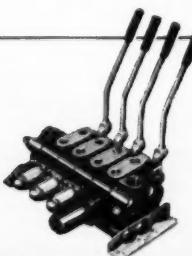
Vickers Hydraulic Power Steering Booster

Provides effortless, positive and shockless steering. With the touch of only a finger, driver can steer the heaviest vehicle on or off the road. Fatigue is reduced and driver efficiency increased.



Vickers Hydraulic Motors

Balanced vane type with exclusive "rocking beam" construction and automatic wear compensation. Variable horsepower (constant torque) characteristics; reversible and can be stalled under load without damage.



Vickers Multiple Unit Valves

Assemblies of standard interchangeable sections provide any desired combination of directional control functions. Exclusive porting arrangement provides smooth and selective inching control and accurate positioning.

VICKERS Incorporated

DIVISION OF THE SPERRY CORPORATION

1538 OAKMAN BLVD. • DETROIT 32, MICH.

Application Engineering Offices: ATLANTA • CHICAGO (Metropolitan) • CINCINNATI • CLEVELAND • DETROIT • HOUSTON • LOS ANGELES (Metropolitan) • NEW YORK (Metropolitan) • PHILADELPHIA (Metropolitan) • PITTSBURGH • ROCHESTER • ROCKFORD • SEATTLE • TULSA • WASHINGTON • WORCESTER

6677

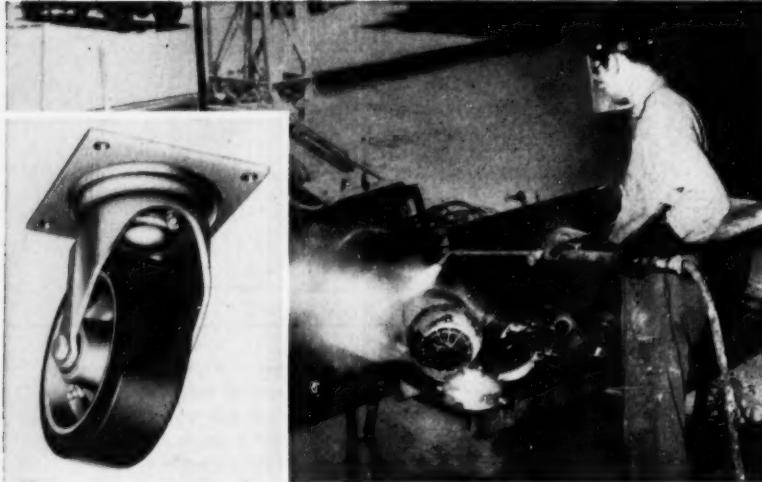
ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

Circle No. 164 on Reader Service Card for more information

MATERIALS-HANDLING NEWS

★ Panel Discussions by Bassick, World's Largest Manufacturer of Casters and Floor Protection Equipment ★

Bassick's new sealed caster was made for spots like this



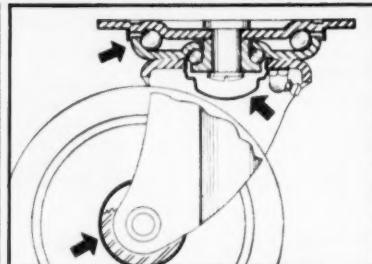
New "3D" caster virtually ends need for lubrication

Here's our brand-new "3D" Sealed Caster (H99 Series) — no Dirt, no Drip, no Drag.

If dirt, debris, water or other foreign matter make caster maintenance a headache, check this new caster. It gives protection where other casters are vulnerable.

Baffle Ring protects swivel bearings from dirt and water. *Grease Retainer* prevents swivel lubricant loss through vertical drainage. *Wheel Bearing Seal* keeps foreign matter out, grease in.

There's no drag on swivel and wheel bearings — they have no preloaded frictional contact with moving parts. Floor surfaces and rubber wheel treads can't be damaged by leaking grease. Write for Catalog Sheet 3D99-53.



How "3D" caster seals in grease, seals out dirt

GOOD ENGINEERING DESIGN marks the new Bassick "3D" sealed caster. Heavy black lines in cross-section drawing locate new *Baffle Ring*, *Grease Retainer*, and *Wheel Bearing Seal*. Old lubricant is easily flushed out, when necessary, by simply re-greasing through standard Alemite fittings. No need to disassemble bearings . . . no danger of seal blowout.

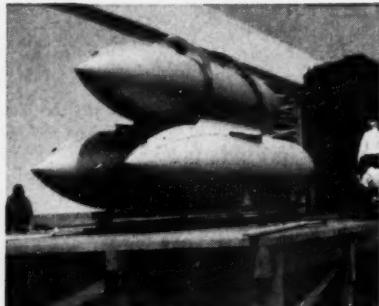


Deep case-hardening produces "file-hard" raceway surfaces

Swivel bearing parts of all Bassick cold-formed steel casters are case-hardened to 15N90 Rockwell hardness. A file can't cut into their raceway surfaces. Specify Bassick steel casters (Series H99, S99, 68, H68, etc.).

Circle No. 18 on Reader Service Card for more information

New tank tracks



Bassick grooved-wheel casters play a key part in shipping these Ryan Aeronautical Company external wing fuel tanks — largest ever made for aircraft.

Ryan's unique system employs inexpensive inverted angle iron track over which a specially-built three-tank rack rolls on Bassick grooved-wheel casters into huge freight cars. These cars hold six tanks (previous cars held only two) but only if every inch of space is used.

Bassick casters help furnish the precise control required to ease the tank racks to the cars, where clearance overhead and at sides is only 2 1/2".

Why Ryan chose Bassick

Ryan's choice of Bassick casters for this job was no accident. They permit accurate control of heavy loads, move 3 times easier than flat wheels in direct contact with the floor. Easily installed angle iron track is self-cleaning. Casters are made in rigid and swivel types; wheel sizes are 4", 6", 8" and 10".

Ask us for the facts

If you've got a tough materials-handling problem, check with Bassick first. As maker of the world's largest line of casters, chances are we have the economical answer. Take it up with your Bassick industrial distributor or write us direct.



THE BASSICK
COMPANY
Bridgeport 2, Conn.

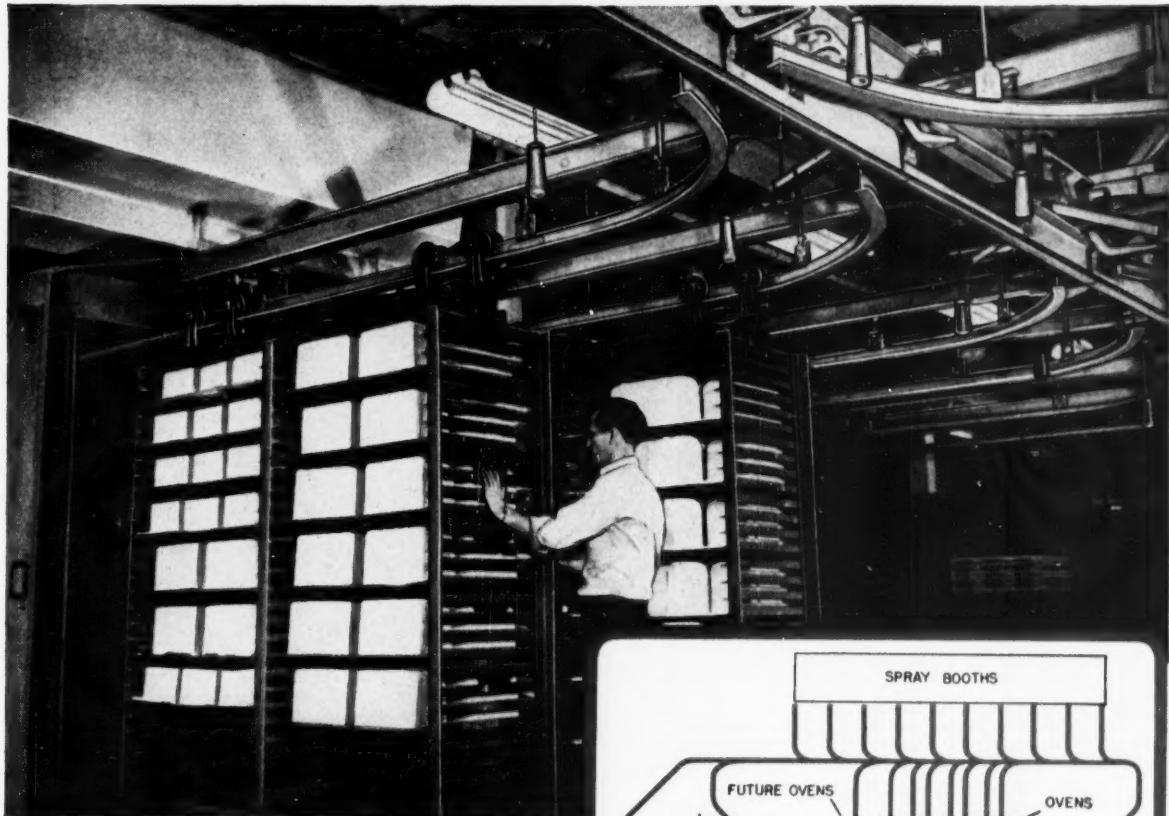
In Canada:
Belleville, Ont.

Bassick
A DIVISION OF
SW
MAKING MORE KINDS OF CASTERS MAKING CASTERS DO MORE

75 YEARS OF CASTER LEADERSHIP

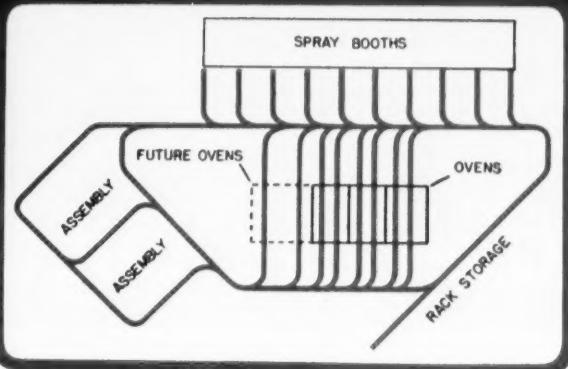
FLOW • APRIL, 1954

Handling a broad range of shapes and sizes?



Louden engineered systems have the answer for that too!

The installation shown above is one of the answers Louden engineered overhead handling systems have for all handling problems. Here, a big enameling and japanning plant finishes everything from small parts to desks and cabinets. Louden monorail and man-powered conveyor racks handle work from dipping vats into baking furnaces on into storage. No unloading. No rehandling. No delays. No



floor maintenance. Manpower and handling costs are cut, operations are accelerated.

You will find the lowest-cost, most efficient, most economical solution to your handling problems when you take advantage of Louden's long experience and competent engineering advice.

THE LOUDEN MACHINERY COMPANY
4304 Broadway, Fairfield, Iowa
A Subsidiary of Mechanical Handling Systems, Inc.



SEND FOR THIS BOOK—
Write for your copy of
"Economical Material
Handling" . . . full of time-
saving, cost-cutting ideas
and case histories. Free
. . . no obligation.

Louden
MONORAIL CRANES

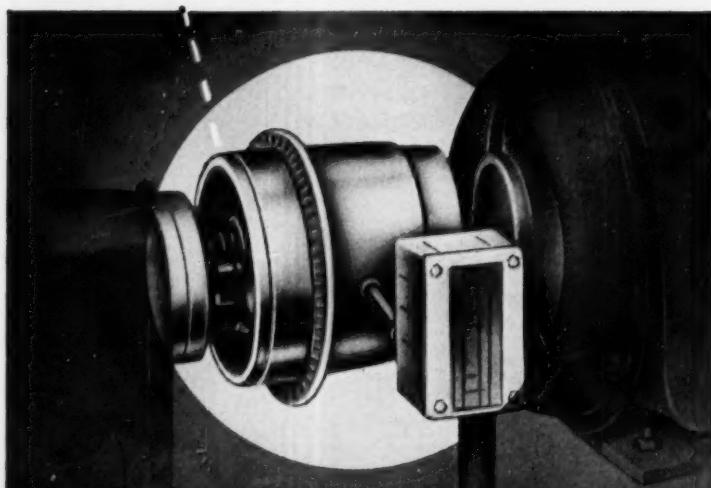
Since 1867—the first name in materials handling

Circle No. 162 on Reader Service Card for more information

FLOW • APRIL, 1954

SAVE THE COST OF

Dawn-Time



ANCHOR-WALDRON

Automatic

Overload Cut Out

*Protects
Machinery
Reduces
Maintenance
Increases
Production*

Here is the advanced type torque sensitive coupling which eliminates the time losses caused by sheared drive pins.

Its power "shut off" action is completely automatic and takes place at the instant of a dangerous overload. It then resets itself automatically.

The perfect answer where power is transmitted through two shafts in line and where torque limitation is necessary.

For complete details—sizes, working range, etc., write for Catalog 51FM.

JOHN WALDRON CORP.

NEW BRUNSWICK

NEW JERSEY

Sales Representatives in Principal Cities

Circle No. 140 on Reader Service Card for more information

Calendar of Events

April 5-8
23rd Natl. Pkg. Expo. & Conf.,
Atlantic City, N.J.

April 5-7
Yale Traveling Road Show,
Portland, Oregon

April 5-16
Purdue Institute for Packaging Personnel,
Class III, Session B,
Purdue University,
Lafayette, Indiana

April 13-14
Yale Traveling Road Show,
Seattle, Washington

April 15
Traveling Clinic, A.M.H.S.,
Congress Hotel,
Chicago, Illinois

April 20-21
Yale Traveling Road Show,
Vancouver, B.C.

April 22-23
Material Handling Short Course,
Georgia Institute of Technology,
Atlanta, Georgia

April 27-28
Yale Traveling Road Show,
Spokane, Washington

April 29-30
9th Annual Industrial Engr. Conf.,
Statler Hotel,
New York, N.Y.

May 3
Invention Exhibit & Conference,
Cleveland Engineering Society Bldg.,
Cleveland, Ohio

May 3-14
Purdue Institute for Packaging Personnel,
Class IV, Session B,
Purdue University,
Lafayette, Indiana

May 5-6
Yale Traveling Road Show,
Salt Lake City, Utah

May 17-28
Purdue Institute for Packaging Personnel,
Class V, Session B,
Purdue University,
Lafayette, Indiana

June 7-10
National Plastics Exposition,
Public Auditorium,
Cleveland, Ohio

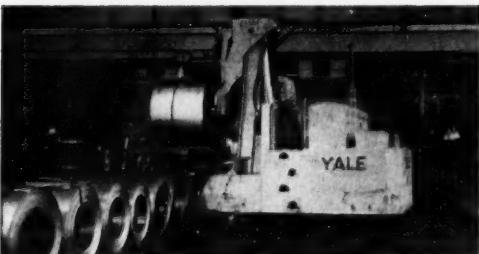
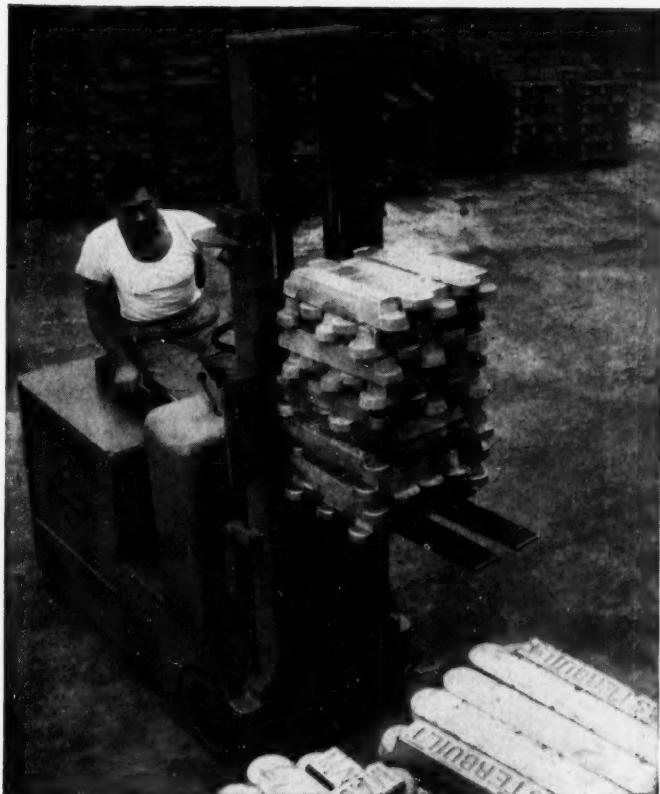
June 9-19
4th Mechanical Handling Exhibition
& Convention,
London, England

June 14-26
15th Management Course,
State University of Iowa,
Iowa City, Iowa

July 13-15
Plant Maintenance Show & Conference,
Pan Pacific Auditorium,
Los Angeles, California

B.F. Goodrich

FREE TW ANALYSIS can cut your fire maintenance costs 20% or more



Heavy loads and equipment? Overloaded tires fail prematurely. Let BFG show you how to match tire and load.



Cutting and chipping? Rough hauling surfaces soon ruin tires. Your BFG man can show you how to get maximum tire life.

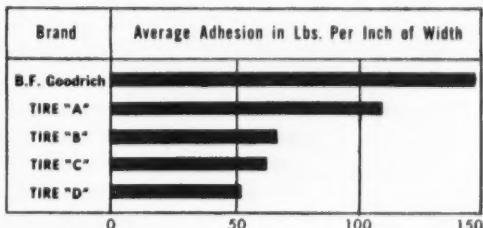
Tire maintenance costs cut 20%. Total tire costs lowered as much as 50%. Such savings have been reported by industrial tire users across the country through the use of the B. F. Goodrich Tire and Wheel Analysis Plan! Contact your local BFG retailer or mail the coupon below. Without cost or obligation, a trained B. F. Goodrich man will study your materials handling operations. He will tell you what type and size tires, what tread design and compound will serve you best.

The advice and counsel you get will be unbiased, for B. F. Goodrich makes a *complete* line of industrial tires. A special TW Analysis is available for manufacturers of industrial hauling equipment.



DO YOU HAVE THIS PROBLEM? Poor adhesion of rubber to steel caused this tire to fail prematurely. The chart below, based on extensive comparison tests of leading makes of tires, proves the superior adhesion qualities of BFG solid industrial tires.

Tests Prove B. F. Goodrich Adhesion Best



0 50 100 150



The B. F. Goodrich Company
Tire & Equipment Division
Department TW-378,
Akron 18, Ohio

Please send me:
 Additional information on your Tire and Wheel Analysis Plan
 Free copy of "Industrial Tire Guidebook"
 Free copy of "How to Get Extra Service out of Solid Industrial Tires"
 Name _____
 Company _____
 Street _____
 City _____ Zone _____ State _____

Circle No. 69 on Reader Service Card for more information



What's New

in Equipment

Summaries of latest information from manufacturers. For more details, use the free-mailing Reader Service Card.



Sheet Fanner Magnet

A new industrial fanner magnet has been produced by the Eriez Manufacturing Company. The unit has been designed to perform the following operations: Separate oily sheets without prying; lift polished or painted sheets without scratching; prevent double feed; provide safety for operators; handle irregular or odd shapes; protect dies; and speed up production. The sheet fanner is available in four strengths and three sizes. Completely sealed castings are said to be an exclusive feature of the unit.

Circle No. 181 on Reader Service Card for more information



Hydratork Drive For Light Fork Trucks

Gasoline fork trucks in the 3000-5000 pound capacities are now available with Hydratork Drive from Clark Equipment Company. This type transmission does away with the need for a gear shift, high and low gears, a clutch and clutch pedal. It combines a torque converter with a simple, constant-mesh transmission, and makes it possible to operate the fork truck with only three controls—an accelerator, brake pedal and forward-reverse selector lever.

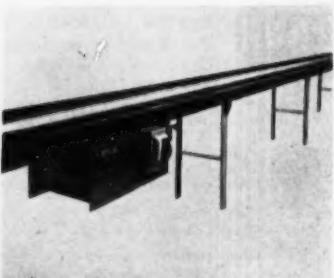
Circle No. 182 on Reader Service Card for more information



Versatile Transmitter-Receiver

A rugged and versatile transmitter-receiver has been developed by the Bendix Radio Division of Bendix Aviation Corporation for industry use. The unit comes complete with controls, associated power supply, antenna and microphone mounted in a single housing. Weighing approximately 50 pounds and operating in the 152-174 megacycle band, the Bendix "Multi-Master" can be used as either a fixed station or a mobile unit, and is said to be easily adapted to narrow band operation.

Circle No. 183 on Reader Service Card for more information



New Belt Conveyor

Speedways Conveyors, Inc. has recently introduced a new addition to their line—the Speedways belt conveyor. Special design and production techniques are said to have been incorporated in this unit, which has formed, box-type frames, smoothly rounded, that enclose the conveyor. Available in any length, 10" through 20" wide, belting may be had in either canvas, oil resistant neoprene or rough top, or with sliders or roller bed. The units come equipped with motors of suitable horsepower to meet requirements in the field.

Circle No. 184 on Reader Service Card for more information



**NOW!
UP TO 16,000 LBS.
All the famous
Exclusive Job-Tested
Gerlinger Features on a**

**NEW
(106 inch)
SHORT WHEELBASE
FORK LIFT TRUCK**

**Shortest Tail Swing and Shortest Turning
Radius of any 4 to 8-Ton Fork Lift Truck**

With its 11'8" to 12'4" turning radius (according to capacity), this new Gerlinger fork lift truck...with the short 106-inch wheelbase...has all the balance, lifting power and traction of its 130-inch "Big Brother". Will literally "turn on a dime"!

Exclusive Counter-Action Weight Distribution

Truck can't teeter, and back wheels won't dig in...54% of the weight remains over the drive wheels even when unloaded! Guarantees dependable braking power at all times, longer tire life, less frame strain, maximum steering and operation ease.



5 MODELS...4, 5, 6, 7 1/2 AND 8-TON CAPACITY...

**106-INCH WHEELBASE WITH GERLINGER JOB-PROVED FEATURES TO
SAVE TIME, MONEY AND MANHOURS**

Gerlinger's heavy fork lift truck...with short wheelbase for easier maneuverability, sharper turning...is your answer where space is tight in lumber yard, mill, kiln or factory...or if your vehicles take a beating on rutted roads, through mud, sand, or snow. Regardless of load-size variations up to capacity limit of the specific model, perfect balance is assured, by Gerlinger's exclusive counter-active weight distribution. Any one of the "S" series shown here will outmaneuver and outlast any fork lift truck of comparable size.

GERLINGER S-8 FORK LIFT TRUCK (4-ton capacity)

GERLINGER S-10 FORK LIFT TRUCK (5-ton capacity)

GERLINGER S-12 FORK LIFT TRUCK (6-ton capacity)

GERLINGER S-15 FORK LIFT TRUCK (7 1/2-ton capacity)

GERLINGER S-16 FORK LIFT TRUCK (8-ton capacity)

GERLINGER 130-inch FORK
LIFT TRUCKS...with Vickers
Hydraulic Steering...avail-
able in wide choice of sizes.

Write for full details and specifications
on the Gerlinger you need.



GERLINGER CARRIER CO., DALLAS, OREGON

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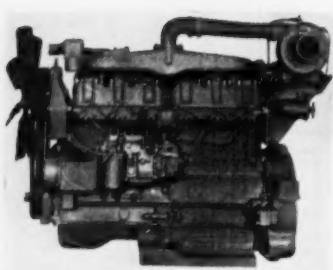
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Magnesium Platform Truck

A very light weight platform truck made entirely of magnesium has been introduced by Magline, Inc. A four-wheel unit, it comes in ten different models, with all trucks in the series rated to handle loads up to 1,000 lbs. All parts are standard and replaceable to lengthen equipment life, reduce maintenance expense. Reversible handles may be installed at either end of the platform or replaced by racks or superstructures for multi-purpose use.

Circle No. 185 on Reader Service Card for more information



Turbo-Supercharged Engine

Hercules Motors Corporation is now producing a turbo-supercharged version of its 6-cylinder diesel engine Model DFXE. The engine, designated DFXE-TS, has a 5½-inch bore by 6-inch stroke and 895 cubic inch piston displacement. It is said to fulfill the demand for more horsepower without increasing fan-to-flywheel length. It is particularly suited to power construction equipment, oil field machinery, mining equipment and other equipment in the 300 hp class where a compact engine is important.

Circle No. 186 on Reader Service Card for more information



Pre-Punched Conveyor Frames

Availability of pre-punched conveyor frames, providing variable spacing of rollers in the field to suit changing requirements, is reported by the Sage Equipment Company. Multiple spacing on various hole centers, such as 3", 6", 9", 12" and 4", 8", 12", 16" and 20", etc., is furnished free of charge, when specified. The manufacturer points out that this feature results in wider adaptability and often eliminates the necessity for purchasing new conveyors simply to obtain different spacing.

Circle No. 187 on Reader Service Card for more information



Microphones for Radio Base Stations

Three new microphone models have been introduced by Motorola, Inc., for 2-way radio base stations. All employ identical cartridges, smaller and more sensitive than those in previous units. Two of the models—TU151 and TU152 (identical except for connectors)—are mounted on a desk stand; the third, TU140, is on a movable floating arm which permits the operator to place it almost anywhere within a 3-ft. radius of its base.

Circle No. 188 on Reader Service Card for more information

Motorized Head Pulley

A new type of conveyor drive in which the electric motor, reduction gear and all moving parts are contained within the pulley shell is produced by Iowa Mfg. Co. The steel pulley shell rotates around the motor, which is held stationary by a torque arm attached to the conveyor frame. Pulleys are said to be easy to install, fully interchangeable, easily adaptable to all types of belt and belt-bucket conveyors, and to increase safety and reduce maintenance.

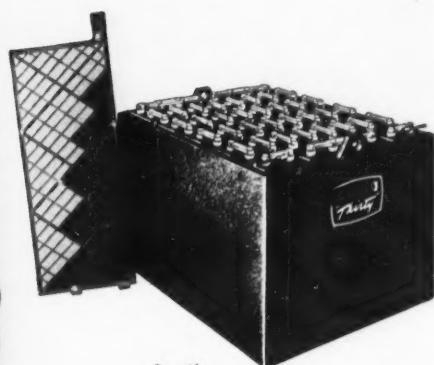
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(Continued on page 169)



**Plenty of
Reserve Strength
THANKS
TO
BATTERY
POWER!**

There's nothing like battery power for rough, tough industrial truck service. Only battery power gives you the extra reserve to meet the stringent demands for higher lifts, faster maneuvering and continuous all-day operation. And the Gould "Thirty" with new Diamond "Z" Grids has the unique features of design that give you extra battery performance and longer battery life . . . make your trucks work harder and longer.



Specify
THE GOULD "THIRTY"
with New Diamond "Z" Grids—
America's Finest
Industrial Truck Battery

GOULD INDUSTRIAL BATTERIES

GOULD-NATIONAL BATTERIES, INC., TRENTON 7, N. J.

Always Use Gould-National Automobile and Truck Batteries

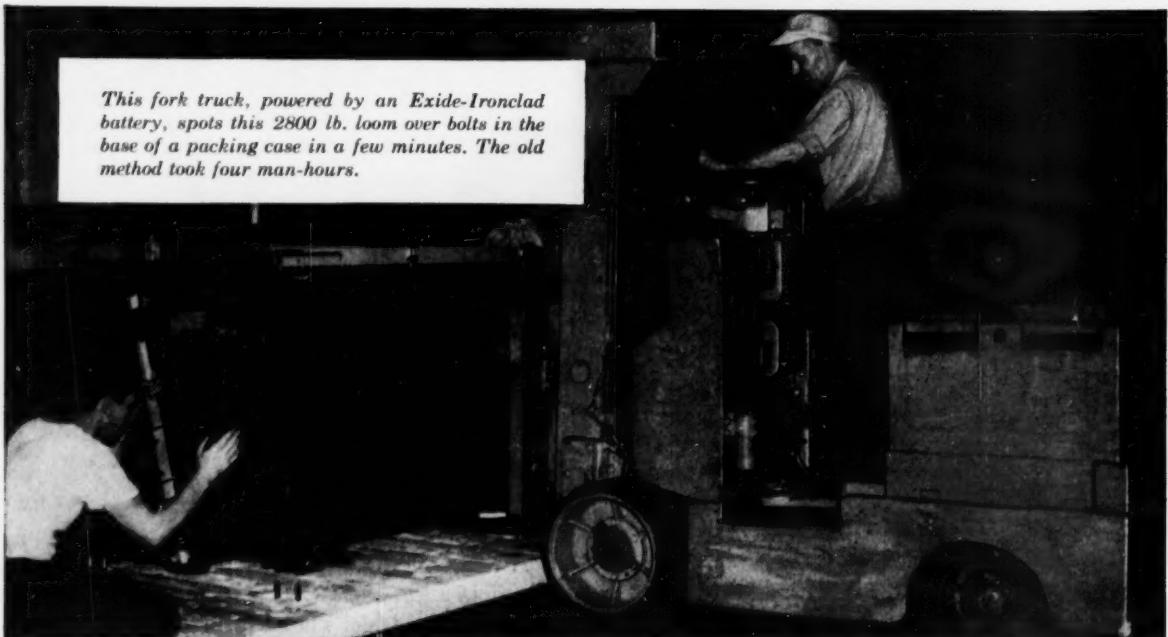
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©1954 Gould-National Batteries, Inc.

GET FAST, SAFE HANDLING

...with low cost *Exide-Ironclad* power!

This fork truck, powered by an Exide-Ironclad battery, spots this 2800 lb. loom over bolts in the base of a packing case in a few minutes. The old method took four man-hours.



YOU GET fast, safe and low cost handling when your lift trucks are powered by dependable Exide-Ironclad batteries. In addition, these rugged, long life batteries assure full-

shift operations and high availability of equipment. Lower costs for operation, maintenance and depreciation make Exide-Ironclads your best power buy — AT ANY PRICE!



THE POSITIVE PLATES are the heart of any battery. Only Exide uses a slotted tube construction. By use of tubes, more active material is exposed to the electrolyte, providing greater power. Also, more active material is retained, giving longer working life.



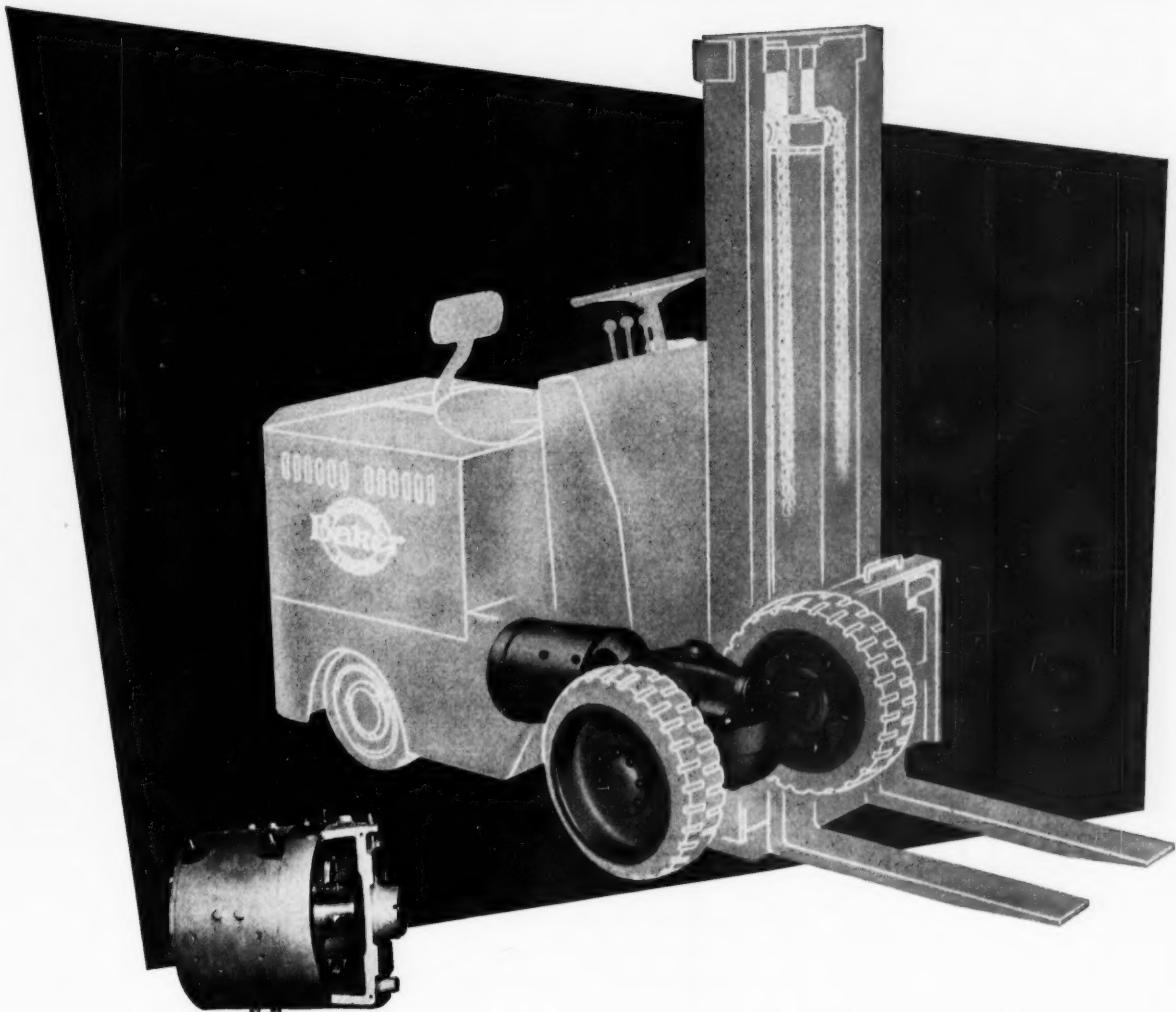
THE NEW THRIFTY HAULERS! The improved industrial truck battery using *non-oxidizing* plastic power tubes for longest battery life, more capacity in the same space. For full details, call your Exide sales engineer — write for Form 1982 (Installation and Maintenance of Motive Power).

Your best power buy
... AT ANY PRICE!

Exide®
IRONCLAD BATTERIES

Exide

INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa. • Exide Batteries of Canada, Limited, Toronto
Circle No. 52 on Reader Service Card for more information



Baker motors use "T formation" for more drive power

The travel motor in an industrial truck is called on to accelerate the truck 300 to 800 times a day. The hoist motor must lift and tilt the load for every start. Power requirements vary widely—a 4,000 pound capacity truck may need only 3½ horsepower normally—but under certain conditions a momentary demand for as high as 50 horsepower may be made of the motor.

No ordinary industrial electric motor is designed specifically for such a job, *so we build our own*. We've developed and patented many exclusive features—features that mean almost 25% more power for size and weight, easier maintenance, fewer burn-outs, less heat. There's about 30%

more copper in Baker motor windings. The "T" slot armature design allows 25% more available area in the armature laminations, resulting in increased magnetic force and reduced current requirements. Special design of field coils and lead terminals are among the other features that mean *more power to you*.

For more detailed information on Baker Fork Truck features, write for 4-color sketch book—Bulletin 64. The BAKER-RAULANG Company, 1219 West 80th Street, Cleveland 2, Ohio.

Baker
INDUSTRIAL TRUCKS

Circle No. 16 on Reader Service Card for more information

MICHIGAN APPROVED CRANES

ANY SIZE
ANY
CAPACITY



**Engineered with All
the MOST WANTED FEATURES**

IMMEDIATE DELIVERY

MICHIGAN has a national reputation for *immediate delivery* on custom-engineered cranes of unequalled dependability, durability and low cost! Literally hundreds of letters in our files from industries like yours is your absolute assurance of unbelievably prompt installation of a Michigan Approved Crane which meets your exact requirements. No finer cranes have ever been built, because Michigan quality-controlled manufacturing is never sacrificed, even in the smallest detail, to the most rigorous delivery deadline!

SHOCK RESISTING FLUID DRIVE

Power is transmitted through moving oil, protecting motor and drive mechanism from shock.

ANTI-FRICTION BEARINGS

Moving parts are mounted on ball or roller bearings, reducing wear from friction.

PUSH-BUTTON MAGNETIC CONTROLS

An all-important feature which protects motors against damage from overloads.

EXTRA-RIGID BRIDGE

Your assurance of the utmost in stability and safety, a plus Michigan feature.

LOWER HEAD ROOM

Lets you lift loads higher, allows more overhead space for stacking and storage.

SEND ME
YOUR NEW
CRANE
BOOKLET

Name
Address
City
State

WRITE FOR FREE LITERATURE TODAY!
MICHIGAN CRANE & CONVEYOR CO.
117 MCKINSTRY AVENUE • DETROIT 9, MICHIGAN

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association
and society
NEWS

• More than 150 persons were present at a recent joint meeting of the Montreal Chapter of A.M.H.S. and the Quebec division of the Canadian Industrial Traffic League. There was a panel discussion, and the material handling men answered questions by traffic managers, covering various phases of handling. Subjects covered were palletized handling in freight sheds, pallet pools, space saving methods, reduction in handling costs and preventive maintenance on equipment. Panel members were: D. A. Gillespie, moderator; G. N. Johnston; S. Kom; W. S. Leyland; L. J. Stock and H. G. Worley.

• The Society of Industrial Packaging and Materials Handling Engineers has a new address in Chicago. The enlarged quarters are located at 111 W. Jackson Boulevard, Suite 611.

• The National Canners Association held its 47th annual convention in Atlantic City recently. Officers elected for 1954 were: President, E. N. Funkhouser, Dewey & Almy Chemical Co.; Vice President, C. K. Wilson, Food Machinery & Chemical Corp.; Secretary-Treasurer, W. D. Lewis (re-elected); and Ex-Officio, Hal W. Johnston, Stecher-Traung Lithographing Co., retiring President. Here the prediction was made that by 1956 baby food and frozen juice concentrate will be packed at operating speeds of 750 to 1000



**MEET THE
ALL NEW, BETTER
WILKIE
TELESCOPIC CONVEYOR**

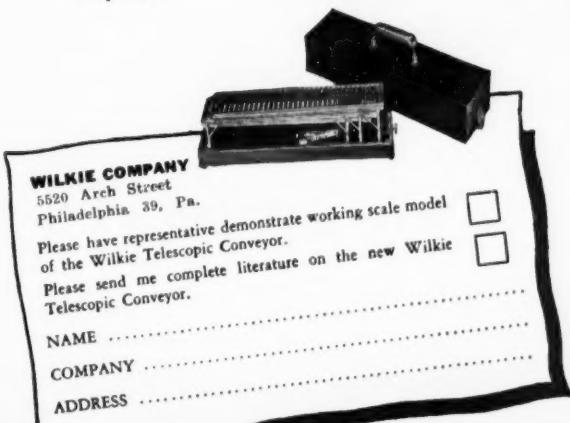
Mfd. under Pat. No.'s
2,613,788
2,613,789
Other Pat's. Pending

**makes loading and unloading
FASTER, SMOOTHER, EASIER!**

In trailers, box cars or warehouse, follow the load with Wilkie Portable Telescopic Conveyor to speed material handling, lower handling costs. So great are the savings that initial costs are often returned in a few months, even when Wilkie Conveyors are used only part time.

The newly designed Wilkie Telescopic Conveyor "pulls-out" or "pushes-in" at either end on roller bearings with only feather-touch effort. Once set up, no adjustments ever have to be made as the heights and pitch accommodate more than normal variations.

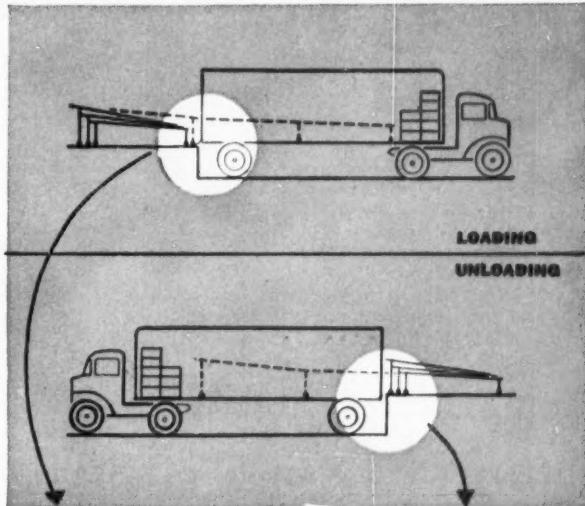
For the full story on how Wilkie Telescopic Conveyors can benefit you, fill in the coupon now!—standard telescopic wheel and roller models meet most every need.



WILKIE COMPANY
5520 Arch Street
Philadelphia 39, Pa.

Please have representative demonstrate working scale model
of the Wilkie Telescopic Conveyor.
Please send me complete literature on the new Wilkie

NAME
COMPANY
ADDRESS



SELF-ADJUSTING . . . Plus or minus differences between trailer floor and platform, sloping floor or sloping runway . . . the Wilkie handles them all without adjustment. The angle of slope changes but never the height of the legs.

WILKIE

TELESCOPIC CONVEYORS

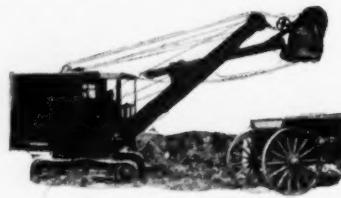
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the Trademark that Signifies PROGRESS

You can always rely on equipment carrying the distinctive UNIT emblem. Backed by more than a quarter century of engineering and manufacturing experience, this well-known trademark signifies progress in crane and shovel design. It is your guarantee of obtaining the finest and most dependable equipment that money can buy.

● **1930** — Every UNIT was equipped with ONE PIECE GEAR CASE, enclosing all gears, shafting and bearings in a constant bath of oil. Also featured was the CLUTCH SHAFT ASSEMBLY, using Disc Type Interchangeable Clutches and "Straight-in-line" engine mounting. Reduces maintenance. Improves performance.



● **1939** — Introduced AUTOMATIC TRACTION BRAKES. These internal expanding friction type brakes, engage and release automatically and provide traction lock without manual control. Steering is accomplished by single lever control.



● **1944** — Yes 10 years ago, UNIT made the "break" from the old style conventional type of cab to the UNIT FULL VISION CAB. The compact design of the upper structure enabled UNIT to make this decided improvement, giving the operator 360° of complete visibility. This exclusive feature was designed into the machine . . . not just tacked on.

● **1954** — Bring NEW DEVELOPMENTS such as: UNIT with TORQUE DRIVE — SOLENOID ACTUATED DIPPER TRIP — ALUMETALIC CLUTCHES — Latest Crane Carrier Design and other UNIT features described in Bulletin U-1153. Write for your copy.



UNIT models available in 1/2 or 3/4 yard Excavators . . . Cranes up to 20 tons capacity . . . Crawler or Mobile types . . . Gasoline or Diesel. Ask for literature.

UNIT CRANE & SHOVEL CORP.

6531 W. BURNHAM STREET • MILWAUKEE 14, WIS., U.S.A.



All Models Convertible to ALL Attachments!

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ASSOCIATIONS

Continued

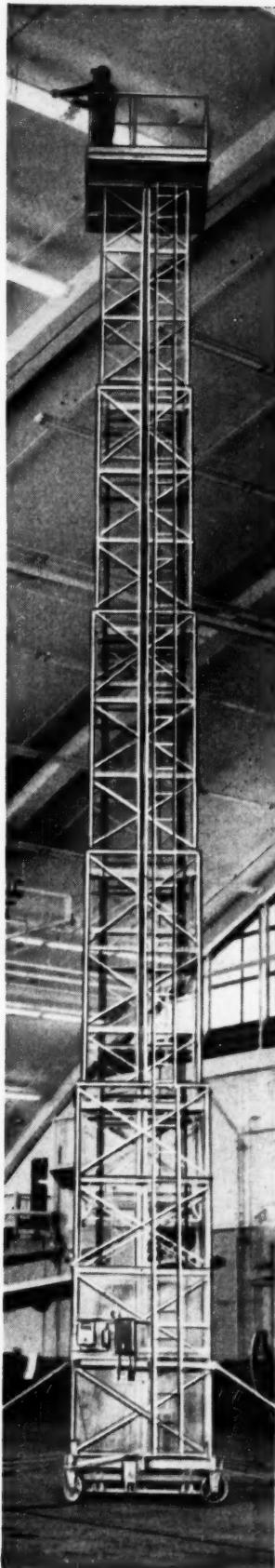
containers per minute. This thought was advanced by H. I. Edwards, assistant general sales manager of the Pfaudler Company, manufacturer of piston type filling equipment. Edwards and W. A. Brittin of Beechnut Packing Company led a discussion on "Filling Semisolid Products".

● The Cleveland Chapter of the Society of Industrial Packaging and Materials Handling Engineers had J. P. Moorhead as guest speaker on February 8. Moorhead, who is a sales engineer of the Evans Products Company, spoke on the elimination of damage in shipping by rail and air.

● Members of the Atlanta Chapter of SIPMHE were conducted on a guided tour through the parcel post operations of the U. S. Post Office recently. In this manner, they were able to observe good and bad packaging methods.

● Curt F. Setzer, director, Glenco Forest Products, was elected president of the National Wooden Box Association at the group's 55th annual meeting held at the Drake in Chicago on January 21-22. He succeeds R. F. Miles, president of Rathborne, Hair & Ridgway Box Co.

● The Indianapolis Chapter of SIPMHE will have Earl B. Candell, president of the national society, as guest speaker. He will speak on packaging developments within the General Electric Lamp Division, the company with which he is associated.



If Lifting is Your Problem...

A DIAMOND CHAIN EQUIPPED LIFTER CAN BE YOUR MONEY-SAVING ANSWER!

Seventy feet, or just a few feet—lifting for maintenance, stacking, changing dies, or on the production line is important business! For safety, dependability, long-life service with minimum maintenance, Diamond Roller Chains are first choice on the nation's foremost lifters. Even when economy of manufacture is considered closely, it costs little to install the best and to be sure of outstanding on-the-job performance and satisfaction.



- Great strength in relation to size and weight
- Positive, slip-proof power transmission
- Withstands shock loading
- 98-99% efficiency maintained
- Flexible in application. Center distances may be long or short—efficient power can be delivered unfailingly.

DIAMOND CHAIN COMPANY, Inc.

Where High Quality is Traditional

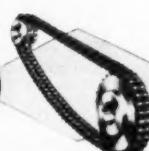
Dept. 624, 402 Kentucky Avenue, Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

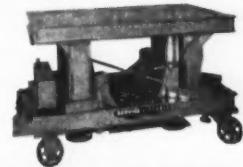
Please refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

Economy Hi-Reach Platform Telescop-
er for maintenance work. Used in
hangar at Midway Airport in Chicago
by Trans-World Airlines.

DIAMOND



**ROLLER
CHAINS**



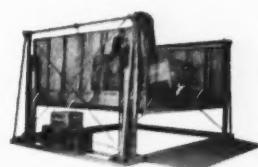
Service Electric Hydraulic Lift Table with 20,000 pound capacity. For sheet metal feeding and cutting operations, —installing and removing heavy dies.



Lewis-Shepard Fork Lifter stacking lamps in warehouse.



Economy Worklifter with 1,000 pound capacity. Pushbutton control station on cord for use by operator at spot most convenient to him.



Service Four Post Lifter has a capacity of 10,000 pounds. Used as a between-floor elevator and for heavy loading and unloading operations.

A Day in the Life of a Clark Fork Truck



7:30 A.M. A barrel of cutting oil goes to the automatic screw machine department firmly supported between the forks of the Clark truck. Special handling equipment is eliminated.



8:40 A.M.

A heavy, hard-to-hoist steel slab is fed directly into a heat-treat furnace. What used to be a dangerous, back-breaking job is now quick, safe and easy.

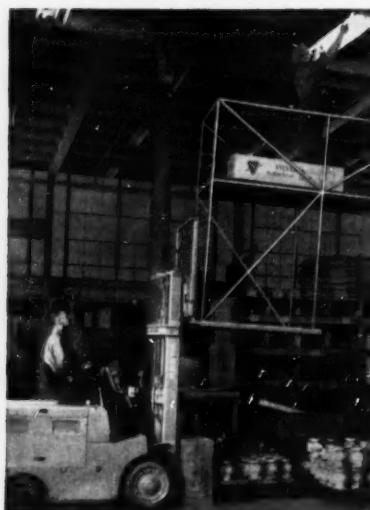


9:12 A.M. Rough castings of valve bodies are picked up from outside overhead storage for delivery to boring mills. The Clark electric truck is just as efficient on good surfaces outdoors as inside.

HOW EDWARD VALVES, Inc., SAVES



9:05 A.M. Clark truck dumps tote box of forgings into heat treating basket. Filling a basket, each of which holds 1500 to 2000 lbs., takes less than three minutes.



10:00 A.M. The Maintenance Department calls for the Clark to replace a fluorescent tube in a high fixture. No more two-man teams to carry and hold a ladder; far less chance of an accident; big saving in time.



10:30 A.M. Cutting set-up time for positioning a new die in a forge-shop hammer—a Clark fork truck with only one man to guide the die. The Clark moves in easily where ordinary hoists are difficult to use.



11:20 A.M.

Back to work for the maintenance department, the Clark truck moves a welding machine to a new location. At least one Clark truck is always ready for off-shift maintenance jobs.



1:10 P.M. In the finished parts stores department the Clark

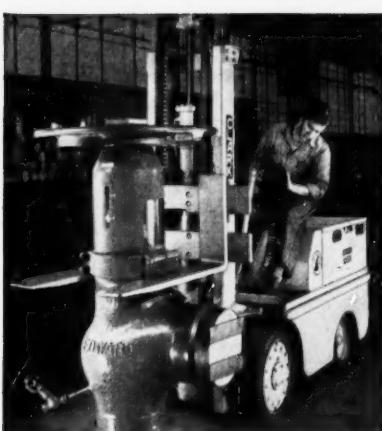
high-stacks a tote box of parts from the lathes. Edward conserves valuable production floor space by cubic-foot, instead of square-foot, storage.



3:20 P.M.

Into a highway trailer truck goes a load of valves for shipment. Direct, one-operation truck loading means savings in the shipping department, quicker conversion of finished orders into billings.

MATERIALS HANDLING DOLLARS BY USING CLARK TRUCKS



2:35 P.M. A finished valve goes to

the shipping department. Using Clark trucks eliminates many skidding operations, cuts crating costs for Edward Valves.

Circle No. 37 on Reader Service Card

"We've declared war on materials handling costs," says W. F. Crawford, President of Edward Valves, Inc., East Chicago, Ind., Subsidiary of Rockwell Manufacturing Co. "Every day we're studying another handling operation to see if there isn't a quicker way to do it with less fatigue for the workman and lower costs."

"Clark trucks—both electric powered fork trucks and **POWER WORKER** hand trucks—are a key weapon. We've used Clarks for

12 years, because they cost less to operate and do more jobs. Versatility is important in a plant our size; to really save money with lift trucks you've got to keep them busy doing many different operations."

Here are a few of the dozens of operations on which Edward Valves, Inc., has cut profit-eating indirect costs by using Clark Equipment.

**CLARK
EQUIPMENT**

INDUSTRIAL TRUCK DIVISION
CLARK EQUIPMENT COMPANY
BATTLE CREEK 13, MICHIGAN

Fast Movers or Shelf Warmers?



Vary-Tallies help you separate the sheep from the goats, the big ones from the little ones, the red ones from the green ones—in manufacturing, sales, accounting, researching and what not!

Vary-Tallies will do *any* counting job you want in any combination up to 6 banks high, 12 units wide (with a minimum of 12 units wide). Yes, you can count on 'em or with 'em *to your profit*—note these features of construction:

- Easily Readable from Any Angle . . . Bold figures Always Centered in Window . . . No Glare . . . Figures not Covered by Fingers in Operation
- Easily Portable, yet Ruggedly Built for Long Wear
- All Parts Corrosion-Resistant; Working parts of Hardened Steel
- Separate Counting Units Can be Rotated like Tires on a Car, to Distribute Wear Evenly
- Not Affected by Extreme Heat or Cold
- Individual Tag Above Each Counter-Window — Not Strip Tabs
- Veeder-Root Quality in Every Part

How Can the Vary-Tally count for you? Write for news sheet and prices.

'The Name that Counts' [®]  **VEEDER-ROOT INC.**

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Mobil-Matic MOBILIFT

**with OIL-SMOOTH Constant-Mesh Transmission
Engineered Especially for FORK TRUCKS**

First with an Oil Immersed Multiple Disc Clutch especially designed for fork trucks.

First with Lev-R-Matic — No Gear Shift...No Clutch Pedal ...ONE-Lever Control.

First with FREE LIFT to give maximum lifting height before inner mast raises.



For years Mobilift users have benefited by Mobilift "firsts"... Mobilift consistently sets the trend in bringing engineering progress to the field of fork lift trucks. Every part of a Mobilift is designed and built for rugged use and to give maximum performance at the lowest operating costs.

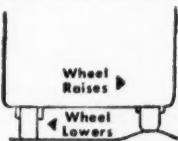
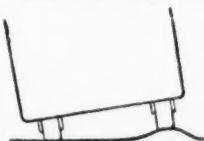
These new "firsts" join other famous Mobilift features to make the new D-424 the trend-setting truck for...easy operation...safety...service...and cost-cutting performance.

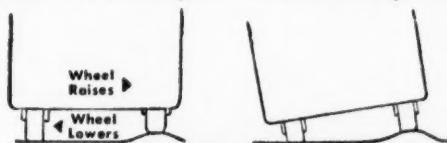
**And Now...First Again with
MOBIL-MATIC DRIVE**

The oil-smooth, high and low range, constant mesh transmission with fluid coupling to the Chrysler 6-cyl. engine. There's **NO CLUTCH PEDAL** — Just **ONE** direction selector lever.

First with HYDRA-LIZER

The hydraulic equalizer on the steering wheels for cross-compensating truck over bumps...

GIVES YOU THIS  **NOT THIS** 



MODEL D-424
4,000 lb. cap. at 24" Load Center. 83" Mast, 128" lift, 64" free lift.

WRITE TODAY for complete details on the New Mobil-Matic MOBILIFT or contact your nearest Lamson-Mobilift office.

MOBILIFT
Mobil-Matic
FORK LIFT TRUCKS

LAMSON MOBILIFT CORPORATION

835 S. E. MAIN STREET • PORTLAND 14, OREGON

- 2317 W. 18th, CHICAGO
- 2724 TAYLOR ST., DALLAS
- 2730 SAN PABLO AVE., BERKELEY
- 790 PATTERSON AVE., E. Rutherford, N. J.
- 1113 SPRING ST., N.W., ATLANTA

Circle No. 82 on Reader Service Card for more information

LITERATURE

Power-Traveled Units: Detroit Hoist & Machine Company's bulletin 810 tells how its Trojan Tractor quickly converts existing hand-pushed hoists and light overhead cranes into fast, power-traveled units. **Circle 46 on Reader Service Card**

Storage Problems Licked: "How To Solve Your Storage Problems" in an interesting free booklet offered by Equipto. Tells how you can have custom-arranged facilities at the price of standardized units. **Circle 13 on Reader Service Card**

Conveying Quickly and Economically: Catalog 220 published by Coburn Sales and Engineering Company describes the three simple steps for easy installation of modern overhead conveying equipment, with minimum investment and installation costs. **Circle 41 on Reader Service Card**

High Capacity Casters: Pneumatic and semi-pneumatic tire casters manufactured by Albion Industries, Inc. give high capacity in a wide range of sizes and types. Big illustrated catalog gives complete information. **Circle 3 on Reader Service Card**

Truck Lifts: How to keep factory trucks rolling economically with Joyce Factory Truck Lifts is told in literature free for the asking. The drive-on model features maximum under-the-truck accessibility and is designed to accommodate all sizes of factory trucks. Manufacturer is The Joyce-Cridland Company. **Circle 150 on Reader Service Card**

Air Cooled Engines: Power to fit the job and the machine is described in a 64 page booklet published by Wisconsin Motor Corporation. All 4-cycle single-cylinder, 2-cylinder and V-type 4-cylinder models, 3 to 36 hp, are detailed. **Circle 147 on Reader Service Card**

Dock Board Safety: A safety curb that prevents damage to power truck tires has been incorporated into the design of the Magline magnesium dock board. Details available on request. **Circle 88 on Reader Service Card**

Multi-use Radio: Information on the 2-way mobile radio said to have a thousand uses may be obtained from Bendix Radio. Called the "Multi-Master", unit is light in weight and compact. **Circle 21 on Reader Service Card**

Light Weight Hoist: Lightness in weight, positive control of the load and lower maintenance costs are featured in literature on Keller Air Hoists available from Keller Tool Co. **Circle 81 on Reader Service Card**

How To Increase Profits: Colt's Manufacturing Company offers free information on packaging machinery said to increase profits and cut packing and shipping costs. **Circle 43 on Reader Service Card**

Greater Utility: "The Gripper Sling" story and how woven wire slings provide you with greater utility may be obtained from The Cambridge Wire Cloth Company. **Circle 33 on Reader Service Card**

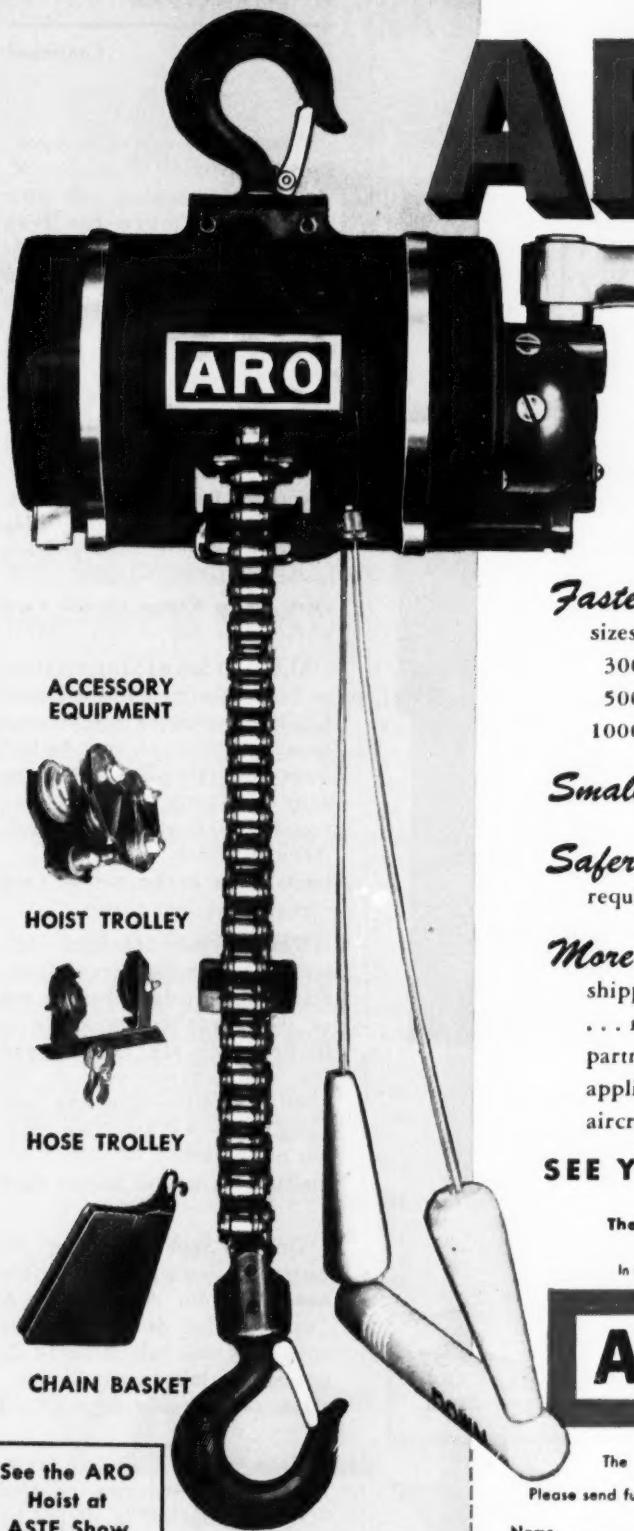
Individually Engineered: Conveyors engineered to fit individual requirements are described by Alvey Conveyor Manufacturing Company in free brochure. Top engineers will tell you how to reduce costs and speed product handling. **Circle 6 on Reader Service Card**

Rapid Sweeping: A two hour sweeping job can be done in ten minutes through use of a power sweeper, according to literature available from G. H. Tennant Company. Revolving brush provides 17 strokes per foot of travel. **Circle 126 on Reader Service Card**

Mechanical Sheet Handling: Full details are available from Fried Steel Equipment Mfg. Corp. on how its Stripveyor pays for itself in less than 100 days. Unit automatically picks up cut strips and conveys them beyond shear bed. **Circle 61 on Reader Service Card**

Tire And Wheel Analysis: How to cut tire maintenance costs 20 percent or more is described in a pamphlet published by B. F. Goodrich. Other booklets available are, "Industrial Tire Guidebook" and "How to Get Extra Service out of Solid Industrial Tires". **Circle 69 on Reader Service Card**

All Weather Protection: Protection, in all types of weather is provided for materials, men and machines, according to literature available from The Elwing Corporation. Company manufactures weather screens for use from warehouse to boxcar or truck. **Circle 155 on Reader Service Card**



CARO

VARIABLE SPEED

AIR HOIST

Faster... Quieter... wide speed range, 3 sizes.

300 lb.—lift rate 75 ft. per min.
500 lb.—60 ft. per min.
1000 lb.—40 ft. per min.

Smaller... one man can easily install.

Safer... no spark hazard... betters all safety requirements.

More Useful... saves time and labor for shipping docks... heat treating departments... refineries, chemical plants and plating departments... machine shops and foundries... appliance, furniture, textile, automobile and aircraft assembly lines... stock rooms.

SEE YOUR ARO DISTRIBUTOR

The Aro Equipment Corporation, Bryan, Ohio

Offices in All Principal Cities

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ARO

AIR HOIST

Also... Air Tools... Lubricating Equipment... Aircraft Products... Grease Fittings

The Aro Equipment Corporation, Bryan, Ohio

Please send full details on the new ARO Air Hoist, without obligation.

Name _____

Company _____

Street _____

City _____ State _____

See the ARO
Hoist at
ASTE Show
Booth 1608

Circle No. 160 on Reader Service Card for more information

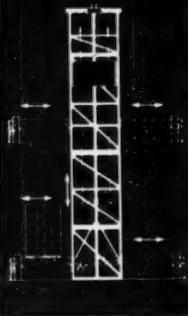
NO PASSENGERS ALLOWED

Courtesy Best Foods, Inc.



RAISING AND LOWERING LOADED PALLETS

Where pallet loads are to be transferred from one level to another, this type of conveyor accomplishes the raising or lowering quickly, safely and automatically. The carrier and stations at all levels are equipped with reversible power units for loading or discharging the pay-load.



At Alvey, every conveyor problem is special. Every system is exactly tailored to your particular needs...designed by the conveyor industry's top engineers to reduce costs and speed product handling.

An Alvey Engineer is always available. He will visit your plant and evaluate your problem. Write for appointment.



Every time you **MAN**handle a package, you add to the cost and nothing to the value; therefore, put your packages on Alvey Conveyors that are engineered to fit your individual requirements.

ALVEY

ALVEY CONVEYOR MANUFACTURING COMPANY

9299 Olive Street Road, Saint Louis 24, Missouri

BRANCH OFFICES IN PRINCIPAL CITIES

Circle No. 6 on Reader Service Card for more information

ALV-127A

AD LITERATURE

Continued

Overhead Cable Conveyor: Bulletin No. 40 from E. W. Buschman Company tells how to produce more for less through use of its conveyors. Tremendous savings are said to be realized since installation of overhead cable conveyor. **Circle 32 on Reader Service Card**

"Eye-Catching" Boxes: Gaylord Container Corporation will furnish information and cooperation on packaging problems. Find out how to ship your sales story along with your product in "eye-catching" boxes. **Circle 62 on Reader Service Card**

\$1,000.00 Saved: Information and specifications on the Baker EY-40 Yardloader, 4000 pound capacity fork truck, may be had from The Baker-Raulang Company. Company claims to save you \$1,000.00 on gasoline fork truck purchase. **Circle 17 on Reader Service Card**

Variable Jobs Handled: Bulletin C-1 from American Mono-Rail Company describes the use of its cranes where space is limited, jobs are variable and low maintenance cost is desired. Consultation on any handling problem is available without obligation. **Circle 10 on Reader Service Card**

On-The-Spot Weighing: Illustrated, descriptive literature available from W. C. Dillon & Company, Inc. describes on the spot weighing which saved 22 percent on labor costs alone. **Circle 48 on Reader Service Card**

Case Histories: A free booklet of case histories entitled "Owners Report" is offered by The Oliver Corporation, A. B. Farquhar Division. The company manufactures a complete line of conveyors. **Circle 58 on Reader Service Card**

Which Truck is Best for Your Needs?

GAS
TRUCK

ELECTRIC
TRUCK

DIESEL
TRUCK

LP-GAS
TRUCK

HAND LIFT
TRUCK

Yale Makes Them All!

...and there's a Yale Truck
with the capacity you need
from 1000 to 100,000 lbs.

YALE has a Truck with fuel, capacity, and interchangeable attachments . . . exactly suited to your particular handling needs. And, every YALE Truck is quality built . . . designed to save time, space, manpower . . . slash handling costs as much as 75%.

OPERATOR TRAINING TO FIT YOUR REQUIREMENTS

can mean reduced maintenance costs, longer truck life, and substantial production economies through proper use. Ask our representative about this comprehensive YALE service . . . and ask him about the new Finance-Lease Plan for acquiring YALE equipment.

SHOWN HERE ►

is a YALE Fork Lift Gas Truck.
It maneuvers smoothly in
close quarters . . . stacks heavy
loads ceiling high.

YALE*
INDUSTRIAL
TRUCKS AND HOISTS
*Reg. U. S. Pat. Off.

Gas, Electric, Diesel & LP-Gas Industrial Trucks • Worksavers • Hand Trucks • Hand & Electric Hoists • Pul-Lifts
Circle No. 148 on Reader Service Card for more information

FLOW • APRIL, 1954





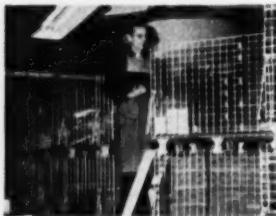
A SURE CURE FOR A ----- HANDLING HEADACHE!



Greater space savings were effected by placing stacked warehouse Palletainers at 45° angle on aisle. Contents always visible — easier lift truck access.



Compact storage of "empties" is facilitated by Palletainer "fold-flat" feature. Leg arrangement permits safer, faster 8-way truck entry.



Easy stock selection is one of the outstanding features of the USP warehouse type Palletainer. Half-drop, hinged end gate makes stocks accessible while units are stacked. Gates lock securely for transport.



Warehousing small parts in large quantities . . . causing a handling headache? USP Palletainers are the most practical, economical solution for achieving better space utilization plus efficient handling.

Specifically . . . USP Palletainers of the warehouse type offer you unknown versatility for maintaining warehouse stocks, convenient — always visible contents for easy order selection, conservation of aisle space, complete stacking safety, safer transport and shipping. All these plus the 75% storage space savings made possible by their "fold-flat" feature.

USP Palletainers have eliminated the guesswork from warehouse parts handling —storage operation. See for yourself how well they will solve your problems—

Union Steel Palletainers are immediately available in three specific types, a variety of practical sizes and capacities ranging from 2000 to 6000 lbs. per unit—conservatively rated. There is a USP Palletainer to match every handling job.

Our field trained materials handling engineers will gladly assist in determining your present and future needs . . . without obligation. Their services are yours for the asking.



PALLETTAINERS

manufactured by

UNION STEEL PRODUCTS CO. ALBION, MICHIGAN

Circle No. 132 on Reader Service Card for more information

AD LITERATURE

Continued

Crane Control: Bulletin C6-3 from Harnischfeger Corporation tells about the P&H Magnetorque AC crane control which is said to give better performance at lower maintenance costs.

Circle 75 on Reader Service Card

Wheeled Loaders: Minneapolis-Moline points out that bin-batching costs drop fast when mixing plants load hoppers with its MM Wheeler-Loader units.

Circle 101 on Reader Service Card

"T-Formation": The Baker-Raulang Company offers Bulletin 64 as informative literature on its "T" slot armature design. This design is said to allow 25 percent more available area in the armature laminations.

Circle 16 on Reader Service Card

Extra Value: A free book for those concerned with efficient, low-cost material handling is offered by The Buda Company. Extra value is claimed by this manufacturer for its fork trucks, every time you turn the key.

Circle 30 on Reader Service Card

Loads Lifted Safely: American Chain & Cable Company tells how to lift a variety of expensive loads safely over costly machines. A survey by this company of your sling requirements will cost you nothing.

Circle 9 on Reader Service Card

Production Pick-Up: ElectroLift, Inc., would like to show how you can pick up production with its worm drive hoist. It is said this hoist moves materials with greater speed, safety and efficiency.

Circle 53 on Reader Service Card

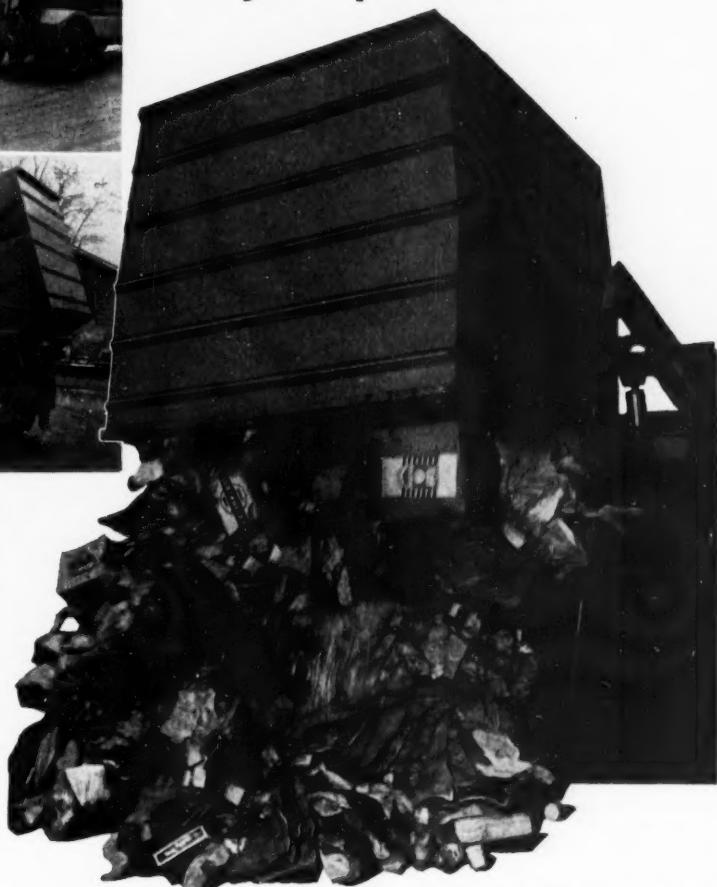
Rubbish Disposal is only ONE of the Cost Cutting jobs for the Dempster-Dumpster in your plant . . .



It's amazing, almost to the point of fantasy, yet so soundly real, what the minds of men in all types of industry have cooked up for more efficiency and reduced costs with the Dempster-Dumpster.

Hundreds of plants are handling materials of practically every description with one truck-mounted Dempster-Dumpster serving scores of detachable containers. Here are just a few. Oils, gases, and liquids handled in our Tank Type Containers . . . tools and equipment in our Tool Shed Type Container . . . containers on casters placed for receiving steel chips from lathes or at conveyors for receiving finished products . . . container with doors and windows, replacing shacks for plant guards or nightwatchmen . . . containers built to handle chlorinator ash residue of approximately 1500° F. and there are dozens more.

Containers are placed wherever material accumulates. When loaded each is picked-up, hauled and emptied (as illustrated above) . . . or load set down intact. The entire op-



eration is handled by only one man, the driver, by hydraulic controls in cab.

The containers are built in capacities up to 12 cu. yds. and each is designed to suit the materials to be handled—be they bulky, light or heavy . . . solids, liquids or dust.

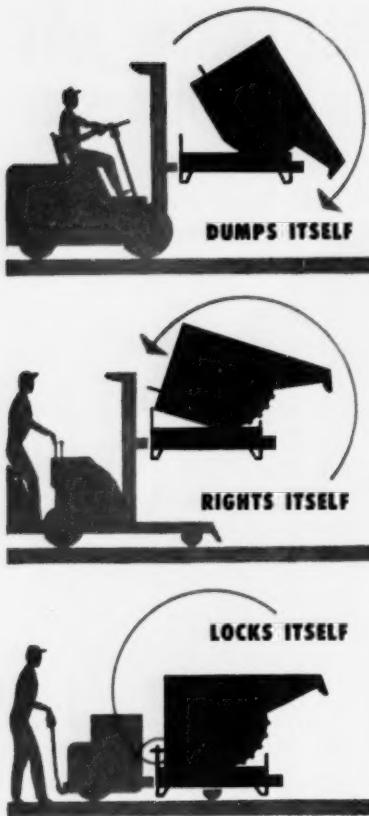
One Dempster-Dumpster, with driver, does the work of 3 to 5 conventional trucks . . . eliminates trucks and crews standing idle . . .

eliminates rehandling of materials and increases efficiency and good plantkeeping.

If you have even any remote idea that this equipment could be adapted to your operation, by all means contact us because being without the Dempster-Dumpster System could easily be costing your company thousands of dollars annually. Manufactured and sold exclusively by Dempster Brothers, Inc.



DEMPSTER BROTHERS, 644 Shea Bldg., Knoxville 17, Tenn.



makes every truck a dump truck!

Fits securely on any standard fork or platform lift truck . . . can't slip off. Insures fast, efficient handling of any wet or dry, hot or cold bulk materials. *Cuts hand unloading by at least 50% . . . with maximum safety.*

This rugged Roura Self-Dumping Hopper is built like a battleship . . . extra heavy gauge welded construction . . . to withstand the terrific knocks and bangs of rough usage. Good for years of dependable service. Available in sizes from $\frac{1}{2}$ to 2 cubic yards.

Thousands of these time-and-money-savers are now in use by America's biggest industries. Let us show you how they can help cut your costs, too.

ROURA Self-Dumping HOPPER

HERE . . . is the easy way to get full details about Roura Self-Dumping Hoppers. Just clip this coupon to your letterhead . . . sign your name . . . and mail to . . .

ROURA IRON WORKS, INC.
1411 Woodland Ave., Detroit 11, Michigan

Circle No. 118 on Reader Service Card

60

AD LITERATURE

Continued

Pipeline to Profits: That's what Townmotor Corporation says about material handling, and the company further points out that no other method or machine moves as many tons per dollar as Townmotor fork trucks.

Circle 129 on Reader Service Card

Move More: The Michigan "24" Fact-Folio published by Clark Equipment Company tells how to move more in $\frac{1}{4}$ yard bites, through use of its yard crane. Numerous action photos and full specifications are contained in the booklet, "Get More Yardage Through Air Power".

Circle 38 on Reader Service Card

Medium-Priced Dispenser: Said to be a triumph of Derby's designing and engineering skill, the medium-priced Super Derby "152" tape dispenser is described in literature from Derby Sealers Inc.

Circle 45 on Reader Service Card

Hoists Pay Own Way: Harischfeger Corporation offers to tell how a company pays for its P&H hoists by saving only three minutes per shift. The rest of the time saved is profit.

Circle 157 on Reader Service Card

Yard Handling Problems Solved: Bay City Shovels, Inc., offers catalogs which describe completely the company's cranes and shovels. They tell how hundreds of yard handling problems have been solved.

Circle 20 on Reader Service Card

New Help for Lifting Problems: That is what Robbins & Myers, Inc., says about its J-3 cable hoist, new from trolley to hook block. It is said to provide maximum economy for your investment.

Circle 116 on Reader Service Card

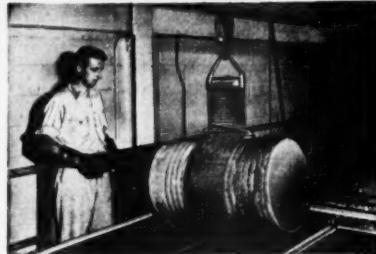
GRIPPER

WOVEN WIRE

SLINGS

give you

GREATER UTILITY



Specially designed handles permit use in choke or basket hitch. Broad, flat sling body gives greater load stability. Complete flexibility gives greater gripping power, even around small radius loads.

Woven wire construction eliminates kinking, tangling, snarling. When not in use, they'll roll up into a compact coil or hang flat against a wall.

All metal construction means long life, freedom from damage, even in handling sharp edged loads.

Available in standard lengths and widths with capacities up to 100,000 lbs. Special sizes on request. Every sling pretested to meet loading specifications.

See your mill supply, materials handling or safety equipment distributor. Or, write direct for complete catalog and name of nearest distributor.



The Cambridge Wire Cloth Co.
Dept. W • Cambridge 4, Md.

WIRE CLOTH METAL CONVEYOR BELTS SPECIAL BELTS FABRICATED

OFFICES IN PRINCIPAL INDUSTRIAL AREAS

DISTRIBUTORS — WRITE FOR OPEN TERRITORY DATA

Circle No. 33 on Reader Service Card

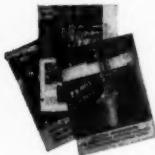
FLOW • APRIL, 1954

L-S

facts about fork trucks

8 tips on how to buy a Fork Truck

1. Get Proof of Dependability



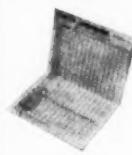
See how others have shaved costs, improved efficiency. Ask for a demonstration or send for Lewis-Shepard case history "Proof Folders".

2. Compare Gas & Electric Trucks



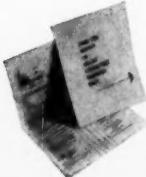
"Gas vs. Electric Folder" gives facts about power, maintenance, depreciation cost. Shows you a digest of others' experience.

4. Compare Operating Costs



Check L-S against any other truck. "Maintenance Report Forms" make it easy to keep track of your operating costs.

3. Compare Competitive Trucks



"Comparison Charts" let you check features of all makes. See for yourself the superiority of Lewis-Shepard Trucks.

5. Choose from a Broad Line



Whatever your needs, an intelligent application can be made from L-S Catalogs—showing the most complete line of trucks available.

6. Consider Attachments



Attachments can multiply your fork truck's flexibility. L-S "Attachment Folders" give detailed information.

7. Know the Manufacturer and his Local Facilities

Check his business reputation and the extent of his service organization in your area. The local L-S man is listed in your Yellow Pages.

8. Above All, Know the Reputation of the Product

Here's one measure: Listed are a few of the "blue-chip" companies* who have recently reordered L-S Electric Trucks.

Glass Mfg. Co.	22 L-S in use—reordered	9
Elec. Mach. Mfr.	297 L-S in use—reordered	35
Motor Car Co.	45 L-S in use—reordered	5
Retail Store	106 L-S in use—reordered	10
Rubber Co.	28 L-S in use—reordered	6

*Names on request



LEWIS-SHEPARD

104-4 Walnut St., Watertown 72, Mass.
76 "WATERTOWN"

Please send me information on 1 2 3 4 5 6 7 8.
(Circle items from above Buying Tips)

Name..... Title.....

Company.....

Address.....

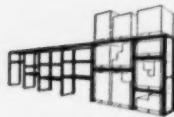
City..... State.....

Circle No. 83 on Reader Service Card for more information

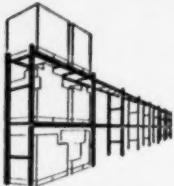
SIMPLICITY AND INGENUITY have made
American STORAGE RACKS



AN EXCLUSIVE
AMERICAN FEATURE



Adjustable Pallet Racks



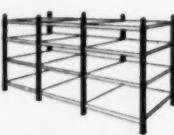
Standard Pallet Racks



Skid Racks



Drum & Barrel Racks



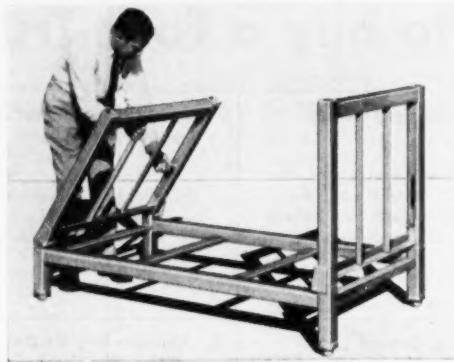
Tool & Die Racks



Coil Racks & Tiering Racks

American Tubular Storage Racks are designed to meet practically every storage need. They are used in every type of business, large and small. Get the facts on American Racks before you decide on any type rack. Send for catalogue.

Send for Catalogue



American Metal Products' Newest Storage Rack . . . the Mobile Storage Rack

AMERICAN
METAL PRODUCTS CO.

STORAGE RACK DIVISION

5959 Linsdale • Detroit 4, Michigan

Circle No. 149 on Reader Service Card for more information

AD LITERATURE

Continued

Fast, Easy Handling: All the facts on the Bond Drum Truck are given in Bulletin R-61, published by Bond Foundry & Machine Company. The truck is said to take the work out of lifting, moving and draining drums or barrels.

Circle 25 on Reader Service Card

Handling Bulk Materials. A brochure which gives complete details on the new Westinghouse front end loader for handling bulk materials is available from Westinghouse Air Brake Company.

Circle 144 on Reader Service Card

Complete Strapping Service: Brainard Steel Division offers information on its complete strapping service, which offers steel strapping and strapping tape from one source.

Circle 27 on Reader Service Card

Unloading Problem Solved: The Thew Shovel Company tells how a company in Pittsburgh solved a complicated unloading problem using a Lorain crane. By cutting loading time, service was improved and lost time and car demurrage charges were reduced.

Circle 128 on Reader Service Card

Why Rectifier Chargers? "We need top efficiency for closely-timed freight handling, and we get it with G-E rectifier battery chargers," says a user of General Electric Company's chargers. Complete literature is available.

Circle 156 on Reader Service Card

New Unitizing Method: How a shipper hit a savings jackpot with a new unitizing method is explained by Signode Steel Strapping Company. A folder from the company shows six basic ways of unitizing.

Circle 122 on Reader Service Card

New... New... New... New...



*How to Move
MORE with a
MICHIGAN*
in $\frac{3}{4}$ yard bites!*

Clark Equipment Company presents the
MICHIGAN Series '24'

**Model T-24 Truck, 6x4 and 6x6; Model C-24 Crawler
Shovel, Clamshell, Crane, Dragline, Hoe**

14 Reasons Why—the MICHIGAN Series "24" Is Your Best Buy In '54

Full Vision Cab—new, stylized; all-around and overhead vision—3604 sq. in. glass; comfortable, quiet

Air Controls—clutches actuated by famous MICHIGAN* Air Controls

Power Clutches—single plate, double-disc, multiple-segment—air operated

Primary Drive—power transmitted through two sets spiral bevel gears running in oil

Shafts and Drums—hoist and crowd drums ball bearing-mounted on splined alloy steel anti-friction bearing-mounted shafts

Swing Brake—air operated; standard equipment

Circle Gear Casting—large diameter double-flange one-piece steel casting

Hook Rollers—six $7\frac{1}{2}$ " diameter, tapered, adjustable; ball-bearing mounted

Cast Turntable—machinery deck with boom hinge pin brackets and hook roller brackets—single steel casting

Big Brakes—powerful hoist and crowd brakes, 30" diameter

Worm Gear Boom Hoist—independent high speed hoist with automatic safety brake—standard

Removable Counterweight—power-handled for easy, quick removal or assembly

Truck Chassis—heavy duty; big engine, transmission, axles; deep section alloy steel frame, cross-braced, welded; rear and center outriggers standard

Crawler Base—one-piece cast steel carbody and circle gear; spring loaded safety brakes; 24" tracks standard

You'll find the MICHIGAN Fact-Folio handy and helpful; contains full specifications, an interesting book "Get More Yardage Through Air Power," and numerous action photos. The coupon will bring yours promptly.

*Trademark of Clark Equipment Company

**CLARK
EQUIPMENT**

**CLARK EQUIPMENT COMPANY
Construction Machinery Division
440 Second Street, Benton Harbor, Michigan**

Please send the MICHIGAN "24" Fact-Folio

Name _____ Title _____

Firm _____

Address _____

City _____ Zone _____ State _____

Circle No. 38 on Reader Service Card for more information

When they say,
"it's the

MOST USED
MOST ABUSED
MOST USEFUL

PIECE OF EQUIPMENT WE HAVE"

Central Construction Co., Indianola, Iowa is talking about its 4-wheel-drive "PAYLOADER" tractor-shovel.

Thousands of others like them too — and so will you. See your nearby "PAYLOADER" Distributor, or write The Frank G. Hough Co., 731 Sunnyside Ave., Libertyville, Illinois.

YOU CAN'T COMPETE IF YOUR EQUIPMENT IS OBSOLETE



PAYLOADER®



Circle No. 77 on Reader Service Card for more information

USE

MonoRAIL CRANES

- { ... Where Space is Limited
- ... To Handle Variable Jobs
- ... For Low Maintenance Cost



These are just a few reasons why American MonoRail Cranes are gaining in popularity and are being installed in increasing numbers of plants the country over. Call in your American MonoRail representative and have him tell you all the advantages of MonoRail Cranes such as—ease of handling—smooth travel—strength—safety interlocks—power operation and interlocking carrier service between and beyond the craneways. Consultation in connection with any handling problem is available without obligation.

Send for your copy
of C-1 Bulletin



AMERICAN

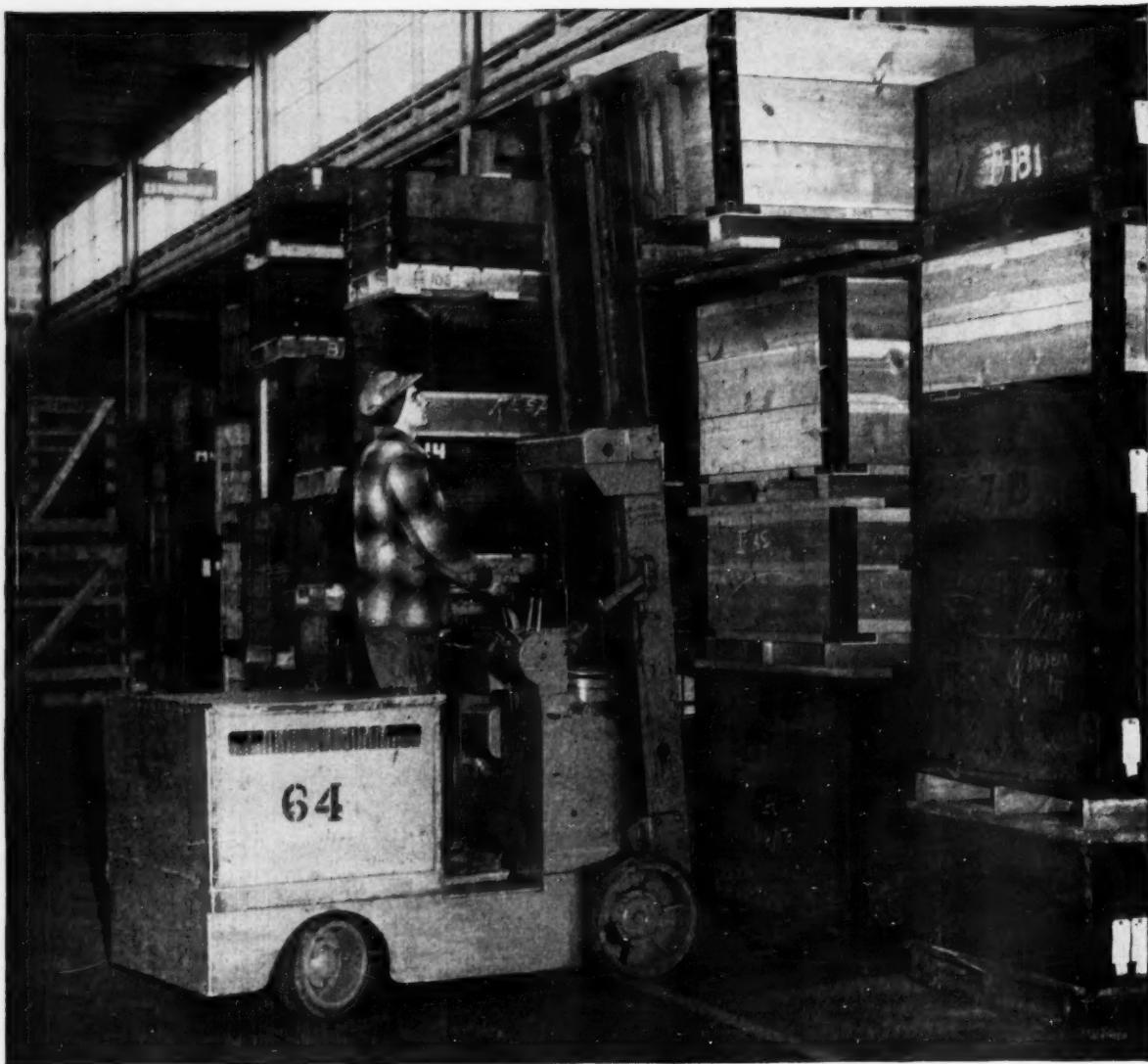
OVERHEAD
HANDLING
EQUIPMENT

MonoRAIL

COMPANY

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For one customer, operating 103 batteries, these amounts averaged \$2.89 per battery per year over a period of five years. For another customer, operating

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are the major reasons these costs are so low. For complete information, why not send for bulletins 3808 and 2039, and request a visit from the Edison field engineer nearest you. Write Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, New Jersey.

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FLOW • APRIL, 1954

About this issue . . .

IN A WAY, this is a special issue of FLOW because it is devoted almost exclusively to material handling in warehousing, storage and distribution activities. But since articles on handling in these phases of industry and business are a normal part of FLOW's content every month, the editors think of this book more as a "concentration" issue—in which a specific type of operation is thoroughly covered by a special feature or group of features on related subjects.

The issue is organized into three major

sections. First come outstanding articles on theory and planning and engineering principles. These are followed by excellent examples in such broad categories as "metal working", "food industries", "petroleum and process industries", and the like. Finally, in the Packaging and Shipping Section, you will find comprehensive discussions of the "more-than-skin-deep" factors of packaging . . . factors which aid all distribution activities in the tremendously important task of providing top quality product at lowest possible cost.

● PRINCIPLES OF EFFICIENT WAREHOUSING

The Department of "Physical Distribution"

a new concept in the organization of material handling

By Oscar F. Stewart, Comptroller, Commercial Contracting Corporation, Detroit, Michigan

AMERICAN industry is said to be entering into a period of highly competitive activity. If this be so, then we can expect some reshuffling in the profitability of corporate enterprises. We can expect to hear from managements affected many excuses explaining their failure to live up to previously announced profit expectations. Also, many reasons will be offered to show why management expects it will do better. These predictions of future improvement will stress "Cost Control". They will try, too, to explain how such control will be accomplished.

In the proverbial 99 cases out of 100, the discussants will elaborate on increased efficiency—a vague term—which they will claim will permit increased worker productivity. New and improved methods will be claimed to be underway. A few will talk in terms of planning of one kind or another, integration and management control—all vague terms.

The one case out of the 100 may mention organizational aspects of its problems, and explain that it plans to proceed along organizational paths as a

means of solving its problems. This one company has a better chance of coming close to a good solution than have the other 99. The reason should be obvious; it is coming to grips with fundamental factors.

Organization should be understood to mean a series of relationships established, in the case of a profit motivated corporation, to help it successfully reach its goal—maximum profits. Peter Drucker (1) in his Concept of The Corporation, states,

"Mass production does not rest on the assembly line, the conveyor belt or on any other gadget or technique, but *on a conscious, deliberate and planned order of relations . . .*"

It would follow, then, that a company with internal relationships out-of-phase with problem creating forces would not succeed in reaching its maximum profits goal. In point of fact, it could not.

When organizational structure is mentioned, there is a formalized set of relationships. It is necessary to

(More on next page)

"Physical Distribution"

Continued

recognize that a formal organization includes many so-called informal organizational relationships as well. These may be good, bad, or of no real significance. Generally, however, this last is not the case. It will be found, upon investigation, that it is these "informal relationships" that are making for progress or are retarding the company in its efforts. The best synonym for informal relationships is people. However, to keep this discussion within manageable proportions, we will restrict ourselves to organizational structure rather than the equally interesting field of informal organization.

The ordinary organization chart is a two dimensional company presentation encasing in neat boxes the



OSCAR F. STEWART
has had extensive experience in many phases of management activity with a number of leading firms. At Ford Motor Co., he was Supervisor of Analysis & Budgets, Ford Parts & Accessories

Div. with Sperry Gyroscope Co., he was an Industrial Engineer, Statistics Supervisor at the Bush Plant; Statistician and Accountant in the Central office. In one department of the Bush Plant he prevented waste of 238,000 man-hours.

names of its prominent people. This is a device that allegedly shows who is in charge of what. It should, though, be viewed as a set of relationships. If we do this, we should recognize that there are more relationships than the vertical.

The major trouble is that most people view such a diagram as depicting the vertical flow of information and commands, i.e., downward and upward. But never is it thought about in terms of lateral communication between organizational components, let alone any other type of relationship. This is where the great problem in modern organizational practice lies. Theory has recognized the existence of the problem, but the operators of organizations have generally refused to face up to it. The consequence of such a situation, where problems are split between two or more organizational components, is that company-wide problems are handled on a piece-meal basis, with unsatisfactory results.

If you look at an organization chart as though it is a statement of functions, you find more or less separated such fields as sales, engineering, production,

finance and accounting, and, perhaps, personnel or industrial relations. This looks fairly logical and seems to imply that management has tended toward a reasonable separation of its functions, thereby making it easier to coordinate them into an effective whole. Let us be somewhat skeptical of this arrangement and perform a quick organizational study, using Material Handling as a focal point.

Who Controls "Physical Distribution"?

In a typical company, for example, it is not unusual to find the receiving function a part of the production complex and supervised by the production control department. The internal movement of materials, especially those used in the production process, are also controlled by the production control department. Shipping and warehousing are, in many instances, under the jurisdiction of sales. Yet these operations have one major characteristic in common. They are concerned with the progression of raw materials and purchased parts through the manufacturing or fabricating processes, out of the company's plant and into its customers' hands.

Right at this point we could show that here is a logical activity that has been broken-up and subjected to different kinds of control. Before we make any assumptions about this condition, let us proceed to make it more complex and raise some further questions.

Plant layout, for example, is under the jurisdiction of the production manager. The production manager's major concern is seeing that his machines are most efficiently grouped for production, and therefore it is believed that he should supervise the layout of the plant. Let us propose that the plant should be laid out in the most efficient manner for the progression of materials within the plant, and that production equipment should then be laid out in the most efficient manner within this revised concept. Who then should control the in-plant movement of material, production, or a new organizational component known as "Physical Distribution"?

We might be willing to accept the thesis that, in the past, the relationships we mentioned above were desirable—and adequate for the job—but we also know that the only constant in our existence, in the industrial world, is change. Therefore, if for no other reason, we should be dubious about this existing set of organizational relationships, and question them most critically.

Our operations are based to a large extent on the coordinated skills of different types of specialists. Therefore, can we expect, for example, production specialists to properly handle and solve the problems requiring specialized skills of a different nature or order of magnitude; namely, the problems of Physical Distribution? If it is true that some of these problems extend beyond the organizational boundaries of the production specialist—and they do—will he be permitted to try and solve them? Also, in the area of a different specialty, we can ask, has the produc-

(Continued on page 88)

Semi

Automatic Stock Operations

By Benjamin F. Smith, Project Engineer, Dexter Lock Company, a subsidiary of National Brass Company, Grand Rapids, Michigan.

EFFECTIVE design of a material handling system today requires a wider knowledge of a company's business than ever before.

Some time ago, it was recognized at Dexter Lock that greater efficiency in all operational aspects would have to be achieved if the firm were to retain its position in a highly competitive market. Relationships in the manufacturing and shipping cycle were inefficient. A continuous flow of goods from production

through storage and shipping could not be achieved. The firm had been growing steadily for over 40 years, with no definitely established plan existing at any time to account for future developments.

As a starting point, it was decided that the department in which an overhaul of the entire system should begin was in the stock and shipping department. Production could then continue uninterrupted on the

(More on next page)

THIRTY NINE spurs take care of 39 customer's orders, with release of each remotely controlled from Stock Checker's station. System allows shipping 240 orders per day, a cycle of 1½ hours per order per spur.



Semi-Automatic Stock Operations . . . Cont'd

current basis while that department was in the process of reorganization. Other departmental changes would then follow.

That this decision was a wise one was reflected in the speed with which an excessive backlog was corrected. The firm had, at one time, a backlog amounting to approximately 9 months of production. With the new order handling system in full operation—and with the coordination it made possible with the production control department—the uncomfortable situation was cleared up within a few months.

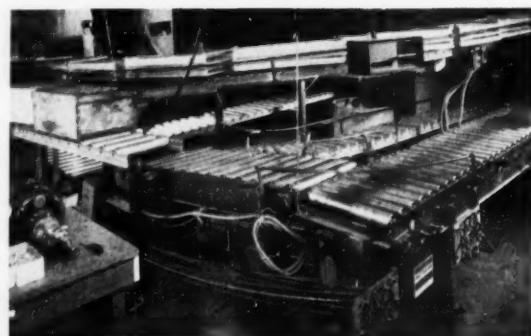
Development of the new stock and shipping operation started with the purchase of a nearby building, and so the material handling problem was complicated by restrictions imposed by this existing structure. How the system was developed and the gains it has so far produced follow.

Business Facts Dictate Handling Decisions

It is axiomatic that the nature of a business must decide its methods and equipment—in material han-



TWO-WAY TRAFFIC between packing room and shipping department—full trays travel by power roller and belt on bottom tier while empties return by gravity roller on top. Note shunt for peak loads.



CONTROL OF LINES feeding main conveyor system is from supervisor's station, where intercom provides constant communication with operators. Supervisor releases brake upon signal that trays are ready.

dling as in all other activities. While basic principles—such as Standardization, Specialization, and Unit Loading—are used in every industry, the nature and volume of activity vary from plant to plant, and from time to time in each plant. The correlation of these principles and activities in the end dictate the final choice of methods and equipment to implement them.

Here are some facts on Dexter Lock Company's business, about which the principles in this article will be developed:

Product Description	Stocking Package	Shipping Package
Builders' Locks & Hardware	Small cardboard box	Cartons
Screen & Combination Door Locks	Small cardboard box	Cartons
Cabinet Hardware	Small cardboard box	Cartons
Trailer Hardware	Cartons	Cartons
Screw Machine Parts	Tote boxes	Cartons & boxed containers

Product Flow Information

Synthetic figures (Table I) are based on a daily record for a week—equated to Equivalent Trays (unit-load



ABOVE: Low pressure pneumatic conveyor (Venturi-type hopper) shoots boxes from belt of box making machine into canvas hampers, which travel on free monorail system to all packing stations. Light bulb over hamper shows outline of contents to indicate when container is full.



FILLED tray is easily lowered to gravity rollers, along which it travels until reaching brake at accumulation end—before entering line to Stock & Shipping.

Code of Ex. Div. P. Gr. B	PART NO.	SHIPPING RECORD				PART NO.
		REQUIREMENTS		REQUIREMENTS		
BOX NO.	CUSTOMER	QTY	TOTAL	CUSTOMER	QTY	TOTAL
SOUP TRAY						
PC. BOX						
PC. TRAY						
MM						
ASIDE LETTER						
ORDERS						

RECEIPTS

SPUR NO. 1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30
31 32 33 34 35 36 37 38 39 40

TIME: 7 8 9 10 11 12 1 2 3 4 5

ASIDE A B C D E F G H J
K L M N O P Q R S

QTY. CATALOG NO. FINISH

SHIPPING DEPT.
PICKING TICKET

ONLY TWO FORMS are required for complete control of stock movement at Dexter Lock Company—Shipping Record and Stock Picking Card.

tray holding twenty four #14 boxes) and upped 30 percent as an expansion figure. They do not include screw machine products, which represent shipments of 20 cartons per day and are treated as "exception" items.

Summary: 793 trays will be packed per day. Of this amount, 47 percent, or 373 trays will be stocked; 53 percent will be shipped directly.

Other Basic Information:

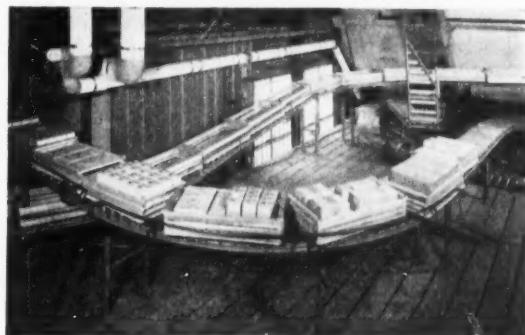
1. There are 4200 different items, of which 2600 are active.
2. We ship 185 orders per day, 78 of which are back-orders.
3. There is an average of 5.7 items on each original order.
4. We ship approximately 465 items per day.

5. We ship approximately 2½ items per order per day.
6. We receive about 100 new orders per day.

Follows General Principles of Good Handling

We are following the principles of *Standardization*, *Unit Loading* and *Specialization*. Our bins are standardized, and our unit load vehicle is a tray holding twenty four #14 boxes. Jobs will be broken down into simple, repetitive, short-period tasks. Thus an individual's learning time is reduced and efficiency is

(More on next page)



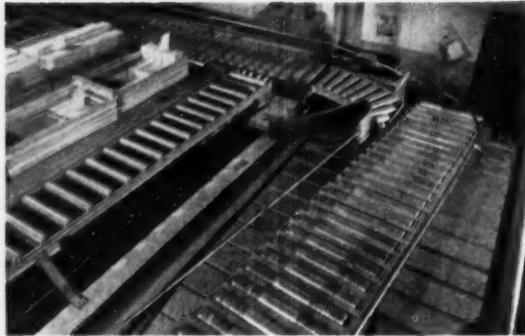
AT CONTROL POINT of Shipping and Stock Dept., arriving stock and returning empties cross. This stock is going direct to shipping because switch to stockroom is open. Note stock arriving from picking area via lower, rear conveyor, for order assembly.



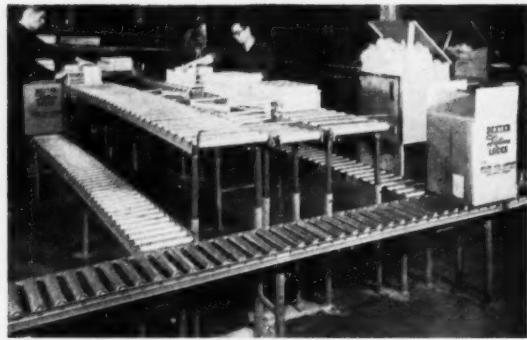
RAPID COMMUNICATION is of utmost importance to efficient operations. All work stations connect to Stock Control Desk with 2-way intercom. In background is Order Assembly Clerk at switchboard controlling spur designation and order accumulation.

Table I

Division	Packed		In & Out of Stock		From Packing direct to Shipping		Shipped	
	%	Equiv. Trays	%	Equiv. Trays	%	Equiv. Trays	%	Trays Equiv.
Builders Locks & Hardware; Screen & Combination Door Locks	76	603	24	191	52	412	76	603
Cabinet	14	111	13	103	1	8	14	111
Trailer	10	79	10	79	0	0	10	79
Total	100	793	47	373	53	420	100	793



JUNCTION of live roller conveyor, which carries accumulated orders, and that which passes stock checking station. Note brake near end of first spur.



PARCEL POST Clerk allows trays to come to brake end of bench. He selects carton, empties trays down into it, sends it to strapping station.

Semi-Automatic Stock Operations . . . Cont'd

gained. (Not only is efficiency increased through repetitive operations but also through the elimination of many set-ups. Jobs requiring many tasks require continual set-ups as the worker shifts from one type of task to another.)

We have used the principle of Specialization in the Packaging line, where three identical jobs have been broken into three separate tasks—with a resulting increase of efficiency beyond 25 percent. This principle is to be applied to Stock Picking. Five identical jobs can be broken down into four separate tasks—Picking, Posting Requirements, Posting Receipts, and Allocations. We will save manpower not only by Specialization but also by choosing the best method of picking for our type of business.

STOCK AISLE with gravity wheels leading to bridge and roller conveyor toward bottom of picture. Note upside down empties (top) for partial orders.



There are two principal stock picking methods: (1) by order; and (2) by item. Most businesses use some version of Picking by Order because it is the simpler and involves less system. A growing minority uses the principle of Item Picking. A decision on the system best suited to a particular business must be made after a study of factors affecting that business, starting with these general, direct factors:

1. Walking time to and from picking location.
2. Walking time between items.

Factors Favorable to Picking by Order

1. Relatively small number of orders: Total distance walked to and from the picking location in a given period varies directly with the number of orders.

2. Relatively large number of items per order: Walking distance between items varies inversely as the number of items on the order.

3. Relatively small number of different

PICKED orders travel on gravity rollers toward belt unit leading to upper level Checking Station. Note bridges connecting to stock aisles.



kinds of items: Walking distance between items varies directly as the number of different kinds of items. (Many concerns try to minimize this effect by having two stock locations—one for case or bulk goods and one for broken lots. This is efficient if picking is done only in the broken lot stock area and double handling is only in bulk quantities.

4. Relatively small storage area and small production runs: Walking distance between items increases directly as storage area is increased and production runs grow larger.

Factors Favorable to Picking by Item

1. Relatively large number of orders: Total walking distance to and from picking location is cut when picking is by item as the effect is combination of orders.

2. Relatively small number of items per order: As walking distance varies inversely as the number of items on the order, it is considerable with a small number. Picking by item cuts walking distance many times by combining orders and picking in walk sequence.

3. Relatively large number of different kinds

of items: Size of stockroom and, consequently, walking distance between items varies directly as the number of different items. Picking by item cuts this distance by combining orders and using walk sequences.

4. Relatively large storage area and larger production runs: Walking distance between items increases directly with these conditions. Picking by item cuts this distance, allows larger storage area and production runs.

Factors Affecting Picking at Dexter Lock

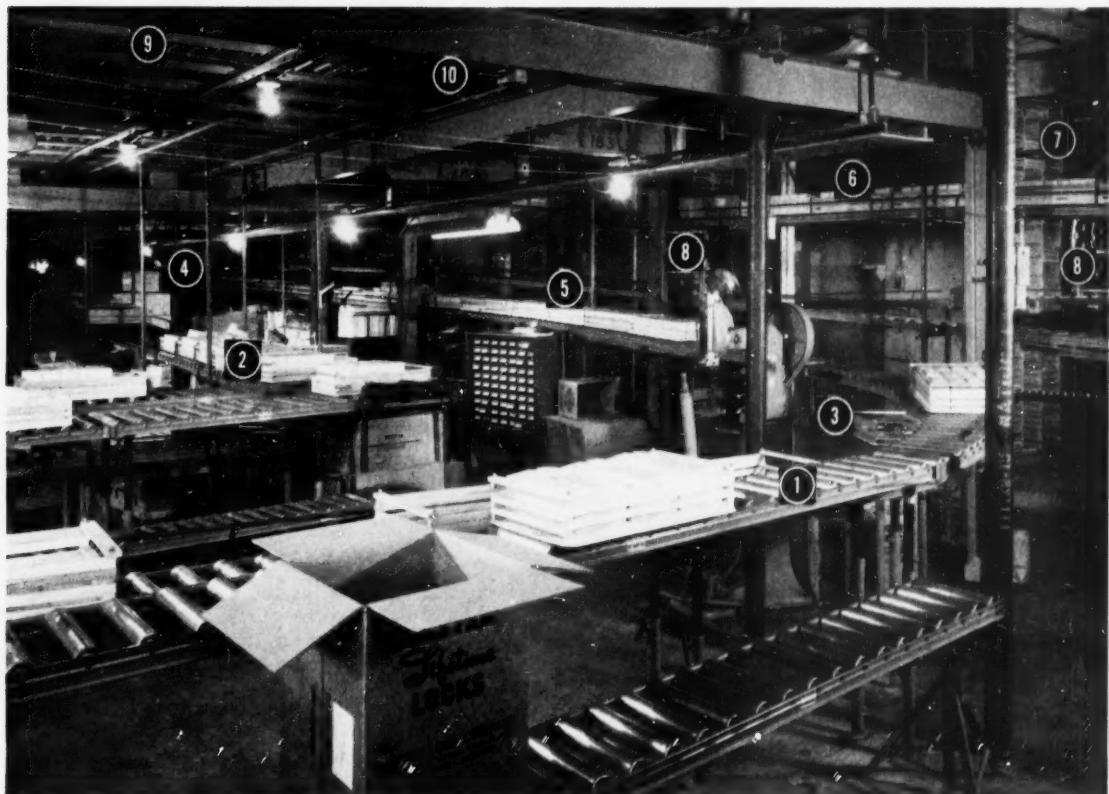
1. Large number of orders (185 per day)
2. Small number of items per order (5.7)
3. Large number of different kinds of items (4200)
4. Large stock area (60 to 80 percent larger than old stock-room).

It is therefore logically developed that stock picking at Dexter Lock shall be on item basis.

Only Three Records Required

Shipping records should increase efficiency by providing: (1) Knowledge of Item Requirements; (2)

(Continued on page 96)



SECTION OF SHIPPING DEPARTMENT shows: (1) "normal course of orders arriving from Checking station; (2) "peak" orders from Checking; (3) gravity wheel conveyor starting empty trays to belt (4) for return to production department; (5) line from Stock

Control to Storage (picking) area; (6) filled trays en route from Picking to Accumulation; (7) storage racks; (8) conveyor bridges from main feeding line to storage area (one for each aisle); (9) control chains from Switchboard; (10) under side of order accumulating lines.

warehousing COSTS can be CUT in HALF



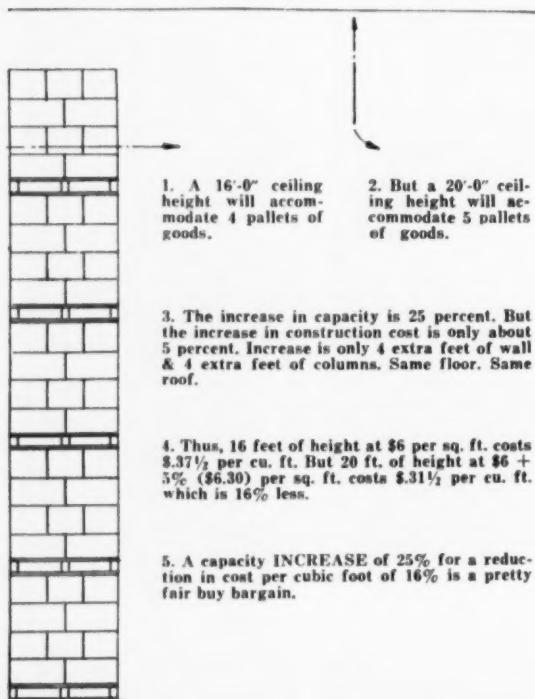
President of Ballinger-Mesarole Co., warehouse design & operations consultants in Philadelphia. Mr. Mesarole was formerly with the Dept. of Commerce & author of several government warehousing research studies. He is an authority on planning and modernizing warehouses for wholesale distribution.

By William H. Mesarole

AT A MANAGEMENT conference held recently at a large mid-west university, I told forty distribution executives, "I'm willing to bet the companies you represent waste a total of several millions a year on their warehousing operations. I'll also bet that, with the right kind of planning, most of your companies could cut their warehouse overheads in half in the next ten years."

I repeat that wager here—and it goes for almost any fast-moving middleman operation, independent or not.

In this article, I will discuss some aspects of a method for cutting warehouse costs. The method is based on a number of axioms, evolved from years of experience in designing functional warehouses and operating them at peak efficiency. These axioms have

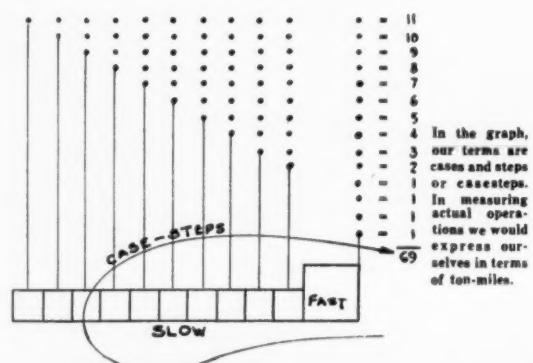
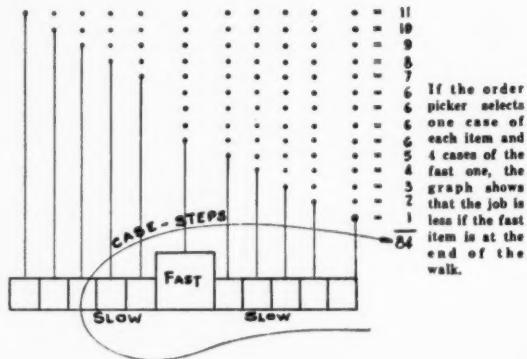


worked well. So well, in fact, that we have cut some overheads by more than fifty percent.

Seven of the principles are:

- Every square and cubic foot should be utilized
- Warehouse ceilings should be high—much higher than average
- Operation should be as completely mechanized as possible
- Small pallets usually afford optimum operation

THE TON MILEAGE PRINCIPLE





FUNCTIONAL warehouse has truck and rail receiving docks far left. Doors right of main entrance mark enclosed shipping platform. Windows provide light and ventilation for offices on partial mezzanine. Non-loading bearing walls may be removed for future expansion.

- Order-pick lines should be employed throughout
- Ton-mileage principle should be used in conjunction with a punchcard accounting system
- Use of a "slot" system is strongly recommended

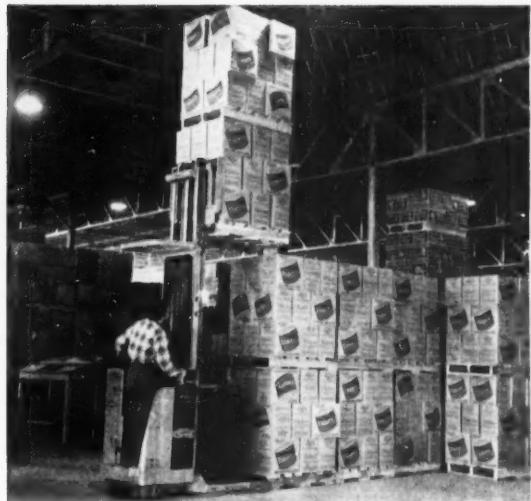
Examining these points in order—

1. Why Maximum Use of Cubage and Footage?

Because the occupancy cost per unit of goods shipped is reduced. The point may be obvious, but its importance increases as the cost of building warehouses rises. In the 1930's, for example, good warehouses were built for \$1.50 a square foot, and rented for about 15 cents per square foot a year. By 1940 the cost was about \$2.50. Rents had doubled. In 1950 we designed a low-cost warehouse in Philadelphia at \$4.60, renting for about 50 cents a square foot. This ever-upward trend can be halted only by (1) stretching building materials, making them go further, producing more space for the same amount of money, and (2) operation which makes this space work harder.

Maximum use of space also reduces the labor cost per unit shipped. If space and operations are planned to get more done per man hour, handling cost per unit is cut. The shorter the distance from receiving to storage, to order-pick location, to tailgates, the less the cost per unit handled. With high warehouse ceilings, extra storage overhead is carried at the point of future selection. If it is stored there originally, the extra haul from storage is eliminated. Thus, storage spaces are kept clear for large contract purchases, or bulky goods, the selection line can be restuffed more quickly, and complicated storage-location records are not needed. So maximum use of footage and cubage reduce occupancy cost and at the same time also

(Continued on page 160)



RAISING two small pallets, lift truck shows how mechanization cuts piece-by-piece handling by one half. Height to truss of 20 feet allows maximum storage.

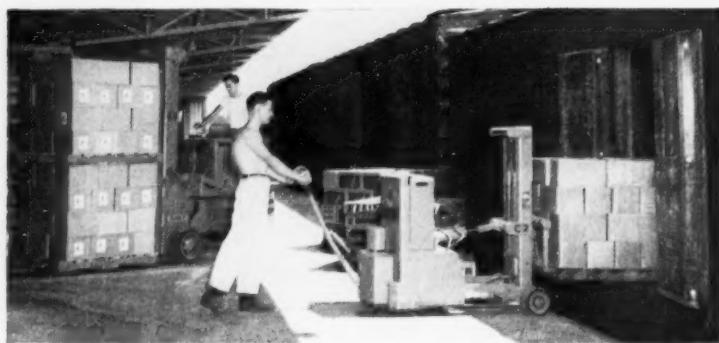


STARTING at beginning of line, picker selects light items. Ton-mileage principle applied to order-pick line makes operation easier, cheaper and faster.



LOADING outbound trailers from order-pick trucks. Scene is only few feet from select line where fast-movers & heavy items are stacked for least movement.

WALKIE TRUCKS are generally used to unload incoming rail shipments. In an average day, from 15 to 20 cars are unloaded on this dock, which runs the full length of one side of the building. Loads are then hauled to storage by rider-type fork trucks.



Systemized Warehousing Practices Expedite Large Volumes of Produce

RECEIVING, storing and shipping 2,800,000 pounds of groceries and produce weekly is the gigantic job taken in stride at the Columbia, S. C., warehouse of Colonial Stores, Inc., where the work has been mechanized at every possible step to turn it into smooth routine.

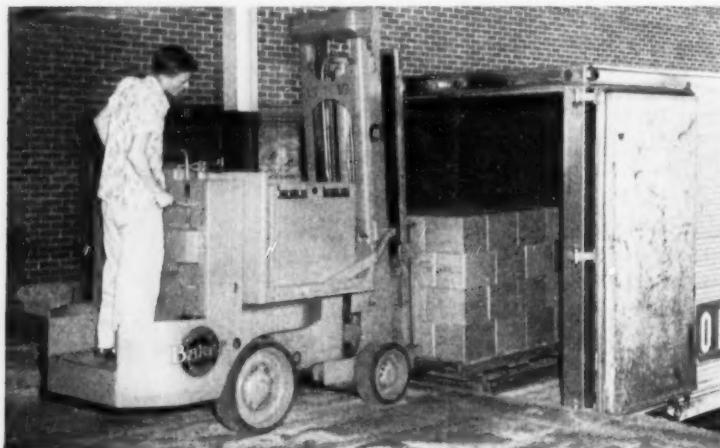
Colonial handling men use every modern handling device from fork trucks to electronic order-selection systems to guarantee an orderly, economical flow of material through their new distribution center.

An average of 750 tons of groceries and 650 tons

of produce are received at the Columbia warehouse each week. Shipments come in by both truck and rail, and are unloaded either at the rail dock which runs the full length of one side of the building or at a smaller truck dock on the building's opposite side.

However, the bulk of Colonial's receivals arrive by rail. Trucks are used principally to deliver fragile shipments and rush orders. From 15 to 20 rail cars are unloaded here in an average day; in peak seasons, the number often hits 25.

Systemized handling takes over the minute a truck



FORK TRUCKS unload highway truck deliveries which are received on a smaller truck dock. Pallet dollies in the truck beds allow workers to push loads in and out of trucks easily. As soon as loads are removed, containers are marked with a floor code which tells fork truck operators where the loads should be placed.



SLOW-MOVING stock is placed on mezzanines which circle the main storage area. An overhead conveyor tows trucks around the periphery of the selection area, and order pickers fill invoices which are prepared so stock is listed in its storage sequence.

or carload of merchandise hits the unloading dock. While the load is being taken off—usually with a powered “walkie”—one man from the warehouse crew dates the containers and marks them with a floor code which tells fork truck operators where in the warehouse they should be placed.

Incoming stock is taken by fork truck either directly to selection areas (if the supply of that particular merchandise is already low) or to its reserve-storage area, which generally is within a few feet of the selection area in which it will eventually be placed. Fork truck operators know exactly where each load goes by the floor coding which has been crayoned on the load at the time of unloading.

Colonial figures it uses two men to haul incoming loads into the warehouse from the unloading docks, which is a remarkably low labor requirement for the staggering 2,800,000 pounds volume of groceries and produce it receives in an average week.

Warehousing

In the grocery storage area of Colonial's Columbia operation, reserve stocks are, for the most part, stored

along the walls of the warehouse building. Some reserves are stored above like items in the selection area, on a mezzanine which runs down two of the lengthwise selection aisles and also spans one end of the selection area. And, a small quantity of reserve merchandise is stored on top of pallet racks in the selection area.

The selection area occupies most of the space in the long, rectangular warehouse. In this area, fast-moving items are stored on pallets and slow and medium-fast movers are kept on pallet racks. Around the periphery of the selection area runs an overhead trailer-tow train which operates continuously, towing merchandise trucks down the center of the aisle which borders the area.

Order pickers (there are five) “pick up” a truck at the start of the line after they have been given their invoices from the order clerk. These invoices are prepared so merchandise appears on the form in the same order it will come up on the selection line, to prevent unnecessary back-tracking. Selecting, billing and loading are all done from this same form, which is

(Continued on page 141)



OBLIQUE STACKING technique used in storage area conserves space by having narrower aisles.



ELECTRONIC ORDER-SELECTION systems are used in the warehouse office to speed tabulation of order forms which go to the warehouse workers. Selecting, billing and loading are all done from the same form.

In this handling system . . .

Everything's Mechanized

but the Cow



Here's an "inside" report showing how a highly modernized dairy has been developed upon sound material handling principles—applicable to many similar distribution problems.

SPECTACULAR gains have been achieved through the application of material handling techniques and equipment in a dairy operation. Visionary engineers of Supplee-Wills-Jones Milk Company, of Philadelphia, designed the system, which has now been in operation long enough to provide a sound evaluation of its effectiveness. And the figures are rather startling, even to those familiar with material handling methods and accustomed to reports of substantial gains from well planned systems.

With a production capacity of some 200,000 quarts of milk a day, the firm has cut by 75 percent the time required to load and unload route trucks . . . lowered from five to two the number of manual handlings . . . reduced by 50 percent the labor required for all distribution activities . . . and cut breakage from an average of 2.3 percent to virtually zero.

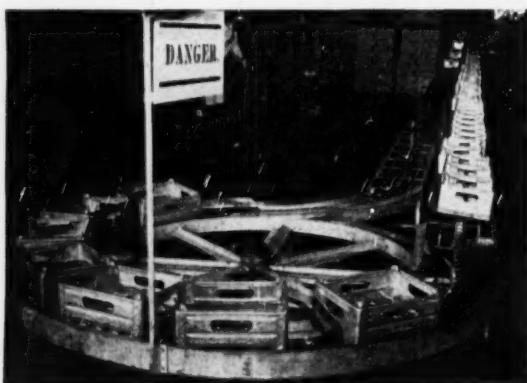
Palletization is Key to Efficiency

Although it would be difficult to single out any one phase of the operation that contributes the most

to its effectiveness, it is the palletization of storage and all loading operations about which the entire system is coordinated.

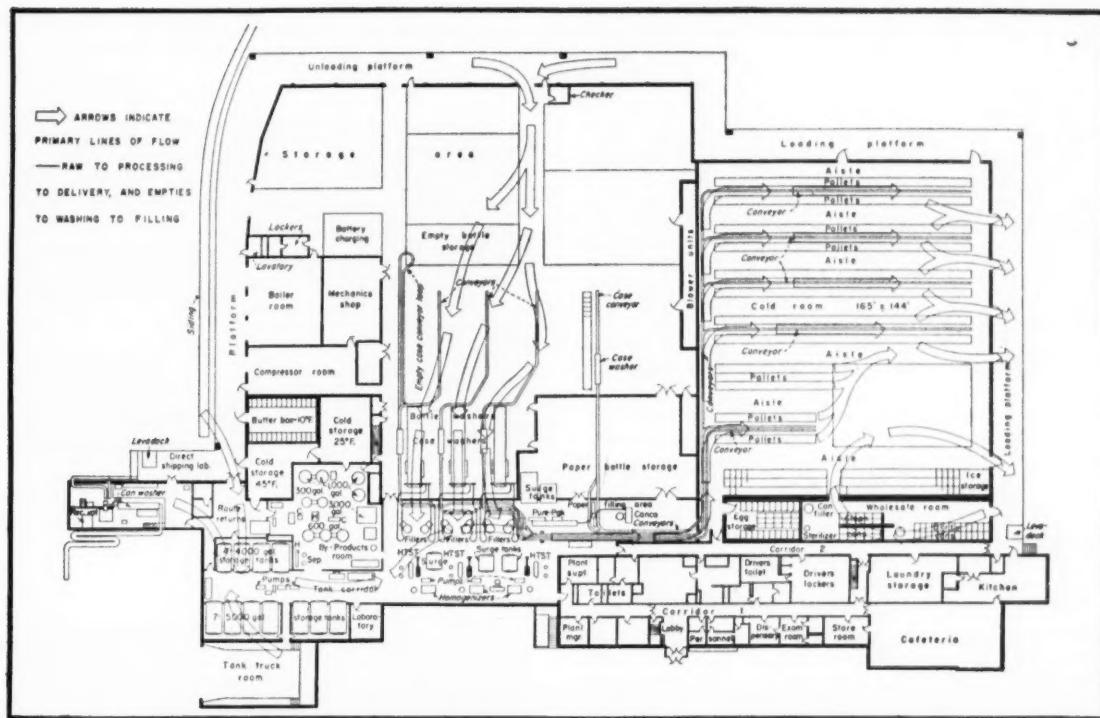
Loading and unloading facilities are available on three sides of the plant, allowing incoming and outgoing shipments to be handled over minimum distances without interference with each other. Milk is received in tank cars, tank trucks and cans, and handling has been especially arranged to start the coordinated flow from one corner of the plant. At right angles to the rail siding is a wing having a truck unloading dock. The tank truck unloading room, with capacity of two trucks, is located around the corner of the main building in the same area. Pipe lines from all three areas allow the simultaneous transfer of milk to storage tanks with a minimum of piping.

Empty bottles and route returns come in on another side of the plant (at right angles to the rail



ABOVE: Regulator allows single cases from three lines to feed to single, main line leading to cold room.
LEFT: Take-up loop between bottle and case washers eliminated need to remove and later replace cases.

● APPLICATIONS OF EFFICIENT WAREHOUSING ● DAIRY PRODUCTS



siding), as do various, additional dairy supplies. In the processing area, conveyorized lines of washed bottles and cases join at filling machines to start cases of filled bottles on the conveyor to the cold, or storage room.

Conveyors Planned for Economies

All operations in the processing area are conveyorized for most economical use of manpower. This is

(More on next page)



BELOW: View of cold room, pictured from same point as that on right, shows route tags over daily orders.



TOP: Two fork trucks handle empties from route trucks in 2 mins. **ABOVE:** Cold room pictured during construction shows live roller feeder lines which bring cases from main line to pallet loading stations.

Everything's Mechanized

... but the Cow

shown especially well on the first processing line, where a variety of products goes into a number of different size bottles. One extra man, at least, would normally be required to handle the empty cases after bottles are removed (to fill the washer at the start of operation) and to change cases whenever a different size bottle was needed.

These tasks have been eliminated through the installation of a conveyor loop between the bottle washer feed and the case washer. Cases need not be removed and later replaced. Instead, they proceed around the loop and through the case washer to arrive at the accumulating table as they are required.

Free movement of filler operators and ready access to all parts of conveyors for servicing and cleaning are provided by loops in parallel filler lines, one of which carries full bottles away while the other brings empties. Capped bottles from each of two fillers discharge at an accumulating table, where cases arrive at a lower level to make loading them easy.

There are three accumulating stations, each with a conveyor of the drag chain type to carry away full cases on a line that runs parallel to the other two. A mechanical monitor allows single cases from each line to enter the single conveyor leading to the cold room.

Feeder Lines for Pallet Loading

The main line leaves the processing area to run along the entire length of the inside wall of the 25,000 square foot storage room. Feeder lines extend into the room, separated sufficiently to allow placement of a row of pallets on each side, with double rows separated by 10-foot aisles.

Areas along the feeder lines have been designated for each delivery route by route numbers hanging on wires suspended from the ceiling. A day's order for each route is attached to this number. Two pallets normally hold a load for one retail truck.

The company handles four principal types of milk. One type is sent over a conveyor at a time. This is continued until all orders (previously filed by route men) have been filled for that type. The run is then switched to another type—and so on until all orders have been completed.

Special products such as chocolate milk, buttermilk, and cottage cheese are brought by fork truck from the special products part of the cold room to be stacked with the filled milk orders, completing the requirements for the route, which will be serviced the next morning.

Five large doors, each with opening and closing controls, open directly from the ends of aisles to the loading platform. When route trucks arrive, they back up to the platform in accordance with a rigid schedule. Fork trucks then obtain the proper pallet loads and place them directly in the route trucks. Thus, in an operation which formerly required as much as 20 minutes, 384 bottles of milk can now be loaded into a truck in less than four minutes.



DOOR CONTROLS serve to minimize refrigeration losses at five large doors which open on main aisles to serve route truck loading platform.



ROUTE TRUCK loading by fork truck which now takes less than four minutes, formerly took as much as 20. Normal pallet load is 32 cases, but 40 can be handled.



WALKIES also used to load wholesale delivery trucks. Hydraulically operated dock levellers are installed to accommodate trucks of various heights.

Continued

When the route truck returns after the day's run, the cases of empties are removed at the unloading platform. As two fork trucks do this job, it takes only about two minutes for the tiers of empty bottles (three pallets high if required) to be ready for the washer and the next cycle.

Pallets Designed for Unit Handling

It was the conversion from round to square bottles that made the palletized handling system seem feasible to engineers of Supplee-Wills-Jones—this and the production of the new, lightweight, tiering aluminum alloy cases. These have better heat transfer characteristics than the old wooden cases, are easier to wash, reduce weight of load, and reduce breakage.

A pallet load is 32 cases, two end-to-end on the narrow dimension, four on each side. The wood pallets measure 31x51x5 inches and have metal retaining plates on corners and sides to keep cases from shift-



NARROW truck, required to operate in minimum space, is starting empties on new cycle. Trucks in this plant take weight of 1900 lbs., turn on 63-in. radius.

ing. Although normal loading for route trucks is four cases high, five can easily be accommodated.

Area Savings Vital

To handle these loads, the firm required six fork trucks that would take a top weight of some 2000 pounds on the long pallets and turn within the 10-foot aisles. The unit selected was a stand-up, end-control model with a turning radius of 63 inches. (Two of them have forks hydraulically adjustable for width, by the operator, so that they can handle pallets from the sides when required.)

The short turning radius of fork trucks was one of the most important considerations in planning the design of the building itself. Cold room area costs about \$35 a square foot. With some 600 feet of aisle length, a saving of one foot in aisle width would amount to a saving of some \$21,000 in construction costs.

Special Bodies for Route Trucks

The final link in the mechanized chain of milk delivery is the route truck. Conventional truck bodies are built with the weight distribution 60-40 over the rear axle—60 percent forward, 40 percent to the rear. The truck required to carry the palletized load had to be designed so that the weight of the 52-inch pallet load would be centered over the axle.

The truck has two sections—a rear platform 59 inches high (to accommodate a pallet load plus ice) and 72 inches wide. In the forward area, just behind the driver's seat, is an area 72 inches wide by 26 inches deep. This allows room for a small ice chest for special products and the stacking of cases of empties until one of the pallets has been unloaded.

Drivers Have More Selling Time

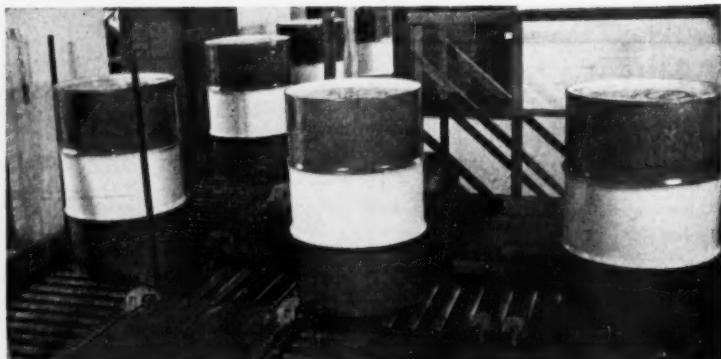
The driver, too, has benefited materially from the new milk distribution system. Since all waste time has been wrung from loading and unloading operations, and since he no longer has to help with these jobs, he keeps neater, feels better, and has more time and energy to devote to sales work on his route.



SAFETY at intersections of routes for fast traveling fork trucks is provided by overhead mirrors. Drivers leaving cold room can view platform traffic.



FULLY EQUIPPED battery charging room is part of regular maintenance service provided for all mechanized equipment used in the plant.



SLAT CONVEYOR (left) runs the full length of the railroad receiving platforms. Note that the flat sides of the channels are flush with the dock to permit hand trucks to roll onto the conveyor. At the shipping platform (above), a section of roller chain deflects drums at transfers.

Conveyorized Storage

PEEDY removal from storage is one of the many outstanding features of a practical, profitable and simple drum handling and storage system at Esso Standard Oil Co., Bayonne, N. J. Since the company must continually meet the rising oil requirements of industry and the general public, its engineers are constantly improving drum-handling facilities to handle more drums faster.

The plant's conveyor system for moving oil drums mechanically takes in three floors of an empty-drum storage building, two floors of a stenciling and full-drum storage building, one floor of a drum-filling building, plus interconnecting conveyors servicing railroad, truck and steamship receiving and shipping platforms.

Receiving, Storage

One end of the three-story empty-drum storage building is equipped to receive empty drums from freight cars. At the other end, drums are received from trucks.

A slat conveyor runs the full length of the railroad receiving platforms and connects with other slat conveyors leading to adjacent buildings. A section of the conveyor may be elevated, when not in use, to permit vehicular travel between the buildings.

The slat conveyor consists of short channel sections secured at each end to motor-driven roller chains installed below the surface of the platform. The flat sides of the channels are flush with the receiving platform to permit hand trucks used in unloading freight cars to roll onto the conveyor.

Drums are delivered by the salt conveyor to a live-roll conveyor which takes them into the first floor of the empty-drum storage building. A vertical lift services the slat conveyor for second and third floor storage, and the truck-unloading platform at the other end of the building also is serviced by a vertical lift.

The first floor of this building is divided lengthwise by a live-roll conveyor which extends from the slat conveyor at one end of the building to the truck platform at the other end. Shorter live-roll conveyors at right angles to the main conveyor, on each side, convey drums to various storage bays.

The main conveyor and all the lateral live-roll conveyors are reversible, so the system can be used equally well for conveying drums either to or from storage.

Portable deflectors are used to divert drums from the main line to the correct feeder lines. These deflectors are fabricated from aluminum to permit them to be lifted easily and positioned across conveyor inter-

sections to guide the flow according to whether drums are being taken from truck or freight car and delivered to or from storage. Each deflector has two curved channel sections, back to back, which sandwich "skate wheels" between their flat sides.

Movement Between Floors

An inclined belt conveyor ties in with the first-floor system to transport drums from the first floor of the empty-drum storage building to the stenciling department on the second floor of the adjacent building.

The second and third floors of the drum-storage building are similar in layout to the first, being divided lengthwise by a live-roll conveyor connecting the vertical lifts at each end of the building, and with feeder lines to and from storage bays. These floors are connected with the stenciling department in the adjacent building by a live-roll conveyor.

When drums arrive in the stenciling department, they remain on the conveyors for stenciling. This department has two center conveyors, two parallel side conveyors and a series of interconnecting conveyors. Platforms are provided along the connecting lines, at a convenient height for stenciling. The connecting con-

(Continued on page 142)



STORAGE AREA has been completely conveyorized to eliminate manual handling of filled drums. Any drum can be removed from storage in less than 90 seconds.

Clamp Handles Drums Quickly, Efficiently



"UNBELIEVABLE" most aptly describes this fork truck clamp attachment which handles drums, kegs, cartons, crates, bales, rolls and other items with equal efficiency—without pallets and without changing the clamp. Unique design permits accommodation of the arms to the shape of the load being handled, and a special coating on the pressure plates reduces the necessary grab pressure and prevents damage to the containers. A routine load is 12 oil drums (above photo shows six-drum load) or 24 pails (right).



Complete Control of Constant Changes

CONSTANTLY-CHANGING quantities, sizes, shapes and weights of a company's products have kept many a material handling man awake nights—yet here is a company which overcame these very problems with a remarkable degree of efficiency.

The General Shoe Company, fourth largest shoe manufacturer in the world, handles 26,000 items through a central raw material warehouse, widely separated from its 21 Southern manufacturing plants. An outstandingly-efficient operation has been devised by use of practically every known type of material handling equipment. The company is justly proud of the fact that it is able to keep raw materials at a 20 to 25 day level, thus eliminating the need for larger storage areas and longer capital investment.

Raw materials are received from the East, and clear through this warehouse in Nashville, Tennessee. The building, which was converted from an old cotton storage warehouse, is a 91,000 square foot, two-story brick structure. One-hundred-ten company leased high-

way trucks and trailers load and unload at their twenty truck dock. Roller and live belt permanently installed conveyor is employed to take bundles of leather and fabric to the second floor. There the material is checked for correct receipt and sorted onto 30 x 60 frame pallets. A fork truck transports and doubly stacks the loaded frame pallets in a temporary storage area, from which point the leather and fabric is systematically checked, graded, marked and rebundled. The rolls are then placed on semi-live skids and/or floor trucks, and carried down an elevator and placed into bins on the first floor.

The thousands of other items are received by motor truck, checked and loaded onto 40 x 40 pallets or 30 x 60 frame pallets at the dock. Fork trucks stack loads two high on the first floor. The many thousands of smaller items, such as heels, counters, welting, laces, ribbons, threads, buckles, etc., are placed on shelves or in bins and carded by description. Specially designed floor trucks are employed to select material



COMPANY-LEASED TRAILERS daily deliver raw materials, which must be checked, graded and temporarily warehoused. Fork trucks, pallets and conveyor are employed for fast handling to temporary storage.



BUNDLES of leather and fabric are conveyed directly from trailer truck to second story of building by means of a power belt conveyor. Here they are checked for count, loaded onto pallets and stacked by fork truck.

requisitioned by the manufacturing plants. The exact amount of material necessary to manufacture a particular quantity of each type shoe is boxed, marked and placed on a special shelf-type skid, 38 x 55 x 64. Hand lift trucks load these skids into trailer trucks, and thus to the various plants.

The inventory control system employed at this warehouse, and designed by Assistant Vice President Candler W. Butler, Jr., is one of the finest of its kind in the country. Although 26,000 items are carried at all times, complete inventory is turned over twenty times per year. Actual physical inventory is taken once a month, only requiring one eight hour working day. Each item is carded and has a code and bin number. Bins are four high and vary in length from 20 to 30 feet. The end bin is left empty, so that when an item has been counted, it may be placed in the empty bin. An ordinary piece of wire, strung over the top row of bins, carries a card designating the codings for each particular row. This card is easily slid down one row and secured when the count has been made. The next month, inventory is started at the opposite end, and thus the empty row.

No Confusion Despite Quantity

Although this warehouse serves 21 manufacturing plants, with a capacity of 85,000 pairs of shoes per day, there is a marked lack of confusion, even at peak periods. There has been no standardization of fork trucks, except as to capacity, which is 2000 pounds. They operate in 9 foot aisles. Hand lift trucks and floor trucks operate in 4 to 6 foot aisles. Through coordination of all departments, the finished product is running off the assembly line within three days after the material has been requisitioned for its manufacture.

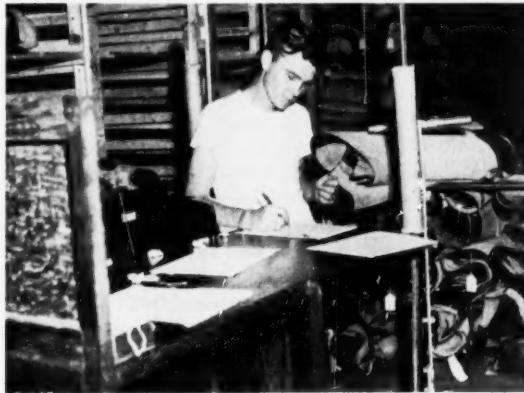
In addition to raw materials, General Shoe has also solved its finished goods handling problem. All 21 Southern manufacturing plants return the completed boxed shoes to this same central warehouse in Nashville. Trailers are scheduled to arrive around 3:00 a.m. By means of a gravity wheel conveyor system with a



SKIDS with shelves serve as collection agent for boxes containing necessary articles for manufacture of shoes, exclusive of leather or fabric. Filled skids are transported directly to the manufacturing plant.

ball transfer table, the boxed shoes are unloaded from one trailer, grouped by trade-name, and switched into empty trailers across the dock. Only five men are required for this job, which is normally completed by the time the busy morning shift of trailers start arriving from the East with raw materials.

Since this company has grown so rapidly during the years, accurate material handling cost figures are not available. General does assure, however, that they have greatly decreased their handling cost. This is further evidenced by the fact that the company incorporated in 1925 for \$130,000, and last year did a total volume business of almost \$130 million. They are still expanding, having just acquired the I. Miller Company, the world's leader in women's shoes. In addition to plants in the States, General has foreign manufacturing companies in Mexico, Peru, Israel, Australia, San Salvador and South Africa.



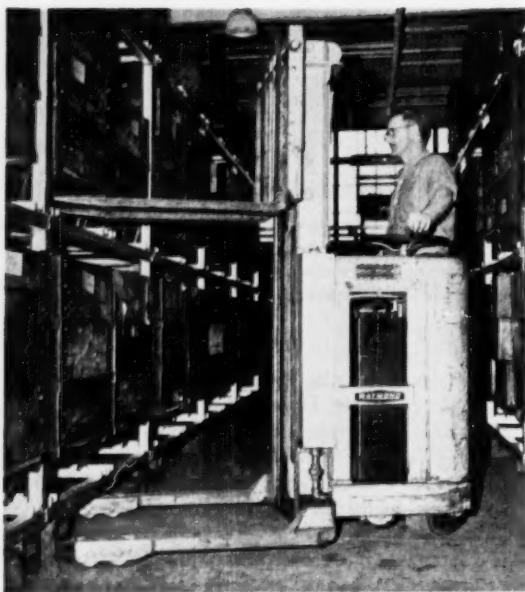
INVENTORY is taken once each month, and is thorough in every detail. The entire warehousing staff helps with the count, which is completed in one day. Complete inventory is turned over 20 times per year.



SHOES ready for the retailer are returned from all 21 manufacturing plants to this central warehouse. By ingenious conveyor system, shoes are unloaded, sorted and loaded onto trailers, all in one operation.

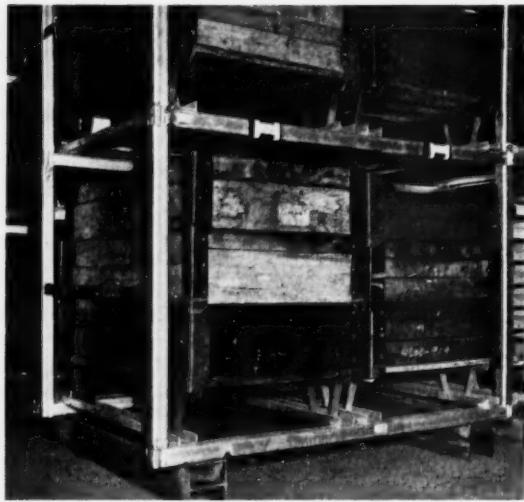
3-Way Space Saving

Eliminates Need for Plant Addition



◆ STRADDLE truck deposits loaded skid on special racks.

RACKS were raised 6½ inches for truck straddle arm entry.



WHEN production necessitates additional storage area, the only possible solution often appears to be enlargement of the plant. But here's a firm that used some ingenuity to produce a compact warehousing arrangement that fulfilled all requirements of expanding activities. And they did it within their existing building—without any structural changes.

The Trane Company, of La Crosse, Wis., urgently needed about 1200 square feet of additional floor space to manufacture a new line of compressors. With-

out an additional building, the only way to obtain more space was to take it out of an already compact in-process storage area of about 3600 square feet.

Three fixed factors were the basis for the handling revision required: (1) the existing, straddle-type fork truck must be used; (2) the unit load containers were skid bins, which, fully loaded, weighed 3000 pounds; and (3) columns in the warehouse were 20 feet apart.

I-beam supports for standard skid racks were the key to the revision plan which produced the desired result—a way to store in 2400 square feet the same amount of material that was stored in 3600. The beams were welded to the bottoms of standard racks, with open sides forming free channels wide enough to accept the arms of the straddle truck.

Racks were designed to take two 30-inch skids side-by-side, between uprights. This made it possible to reduce the width between each two posts of a standard rack from 79 to 67 inches. A maximum number of rack sections could then be placed between building columns, with only four inches to spare between centers of rack posts and columns. About one rack section per row was thus gained.

However, this arrangement made it impossible to use a straddle truck with standard racks having posts extending to the floor. (It was determined that a truck

(Continued on page 168)



BINS OF PARTS were formerly placed on the warehouse floor, one behind the other. Several moves were often necessary in order to reach a particular bin.



Operating over unpaved ground, this TOWMOTOR stacks high, reduces size of storage area for leading manufacturer of concrete pipe.

PIPELINE to PROFITS

You are doing a grand job now, but if you feel there is room for improvement, consider your materials handling. No other operation offers so great an opportunity for saving time, labor, and money! And no other method or machine moves as many tons per dollar as Towmotor Fork Lift Trucks. Whatever you make, warehouse or handle, Towmotor with its dozens of special attachments, its rugged economy, and its operator-ease is today's pipeline to greater profits for the boss. Send for the "Towmotor Portfolio for Operating Men." TOWMOTOR CORPORATION, Div. 804, 1226 East 152nd Street, Cleveland 10, Ohio.

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FLOW • APRIL, 1954



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**FORK LIFT TRUCKS
AND TRACTORS**

SINCE 1919

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Grasp a knitted or woven tie with the thumb and forefinger and jerk up with one hand and down with the other. You will find that this type of tie immediately returns to its original un-wrinkled shape.

Now grasp a silk or a hard surface tie in the manner described at the left. Perform the same jerking motion and you will find that you have seriously wrinkled the tie because the tie itself resisted the rough treatment you gave it.

...and you'll always buy solid woven COTTON BUFFALO Conveyor BELTS



By the very lack of resistance of the tough, cotton yarn woven into Buffalo Conveyor Belts by our exclusive Wov-In-Wear process, we are able to build a tougher, longer lasting conveyor belt for you. This is the belt with the "built-in bounce" that won't fight obstacles but merely mold itself around them and keep on going. If your alignment is a problem, try a woven belt! These extra pliable belts naturally show less wear because of abrasion, are light weight and easier on motors and other equipment, are cleaner and have no odors and are adaptable to almost any conveying job. Compared with other belts, first costs and upkeep are lower. Replace costlier, heavier plied-up belts in your operation at a fraction of the cost.

IN ADDITION TO REGULAR WOVEN BELT, BUFFALO OFFERS 6 SPECIAL TREATMENTS TO HANDLE PARTICULAR PROBLEMS, FOR INSTANCE:

ACID

A tough neoprene latex overcoat is added to Buffalo's regular solid woven cotton belt to make it highly resistant to acids, greases, heat and water. Available in white or black, this belt is completely odorless and ideal for many applications. How about yours?

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200 SIZES
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DISTRIBUTION . . .

(Continued from page 68)

tion specialist the requisite knowledge to solve them.

We can direct the same type of question to the sales manager who is in charge of shipping and warehousing activities. He is not generally interested in technical improvements that can be made in such operations. Especially is this true in areas such as these, which he might view with some distaste. Nor is he concerned with warehousing operations located in cities away from the company's home site, provided they don't create problems in the form of disgruntled customers who have not received their orders promptly.

One of the most important facets of this whole question, which should be apparent, is that the problem involved has been split into two or more parts. The result is that what should be viewed as a company-wide problem is only viewed through the eyes of specialists whose major concern is in some other area of the company's activities. The consequence, therefore, is that our manufacturing overhead and sales overhead are inflated substantially above what they need be.

Alford (2) is responsible for the widely used comment: "... that 22% of the cost of manufacturing, on the average, is due to the handling of material . . ."

While this may or may not be the true figure (some people believe it is higher) these costs are, nonetheless, a substantial factor of overhead that has not received the same kind of analysis given to other corporate problems.

An example is given by E. H. Smedley (3) who states:

"Another reason why an accurate and current knowledge of material handling cost is important is that, in many plants, the task of material handling changes from time to time depending upon work schedules. Under one schedule, for example, the requirements for truckers in department "A" was five men and in department "B" it was three men. With a change in schedule, the situation was

STANDARD GAUGES - SHEETS, PLATES AND WIRE

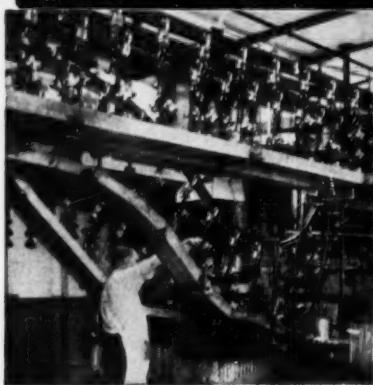
		Thickness and Weight of Sheets and Plates						Thickness of Wire
Number of Gauge	U.S. Standard Gauge Adopted by U. S. Government July 1, 1893	Birmingham or Stubs' Gauge		American or Brown & Sharpe's Gauge		Washburn & Moen Gauge		
		Thickness, Inches	Weight, Pounds, per Sq. Ft.	Thickness, Inches	Weight, Pounds, per Sq. Ft.		Thickness, Inches	
00								
0								
1								
2								
3	0000000	$\frac{1}{2}$	5000	20.4	.....	.....	.....	00
4	000000	$\frac{1}{2}$	46875	19.125	.....	580	23.6	0
5	00000	$\frac{7}{16}$	4375	17.85	.....	5165	21.0	1
6	0000	$\frac{13}{32}$	40625	16.575	.454	46	18.71	3938
7	000	$\frac{3}{8}$	375	15.30	.425	409	16.71	4
8	00	$\frac{11}{32}$	343	14.025	.38	364	14.88	331
9	0	$\frac{1}{4}$	312	12.75	.34	324	13.26	307
10	0	$\frac{9}{32}$	281	11.475	.30	289	11.80	283
11	1	$\frac{7}{32}$	265	10.837	.284	257	10.51	263
12	2	$\frac{5}{16}$	25	10.2	.259	229	9.36	244
13	3	$\frac{3}{8}$	234	9.562	.238	204	8.34	225
14	4	$\frac{15}{64}$	218	8.925	.22	181	7.42	207
15	5	$\frac{1}{2}$	203	8.287	.203	162	6.61	192
16	6	$\frac{13}{64}$	187	7.65	.18	144	5.89	177
17	7	$\frac{11}{64}$	171	7.012	.165	128	5.24	162
18	8	$\frac{9}{32}$	156	6.375	.148	114	4.67	148
19	9	$\frac{7}{32}$	140	5.737	.134	101	4.16	135
20	10	$\frac{5}{16}$	125	5.1	.12	4.88	3.70	120
21	11	$\frac{3}{8}$	109	4.462	.109	4.43	0.8	105
22	12	$\frac{15}{64}$	093	3.825	.095	3.86	.072	092
23	13	$\frac{1}{2}$	078	3.187	.083	3.37	.064	080
24	14	$\frac{13}{64}$	070	2.868	.072	2.93	.057	072
25	15	$\frac{11}{64}$	062	2.55	.065	2.64	.05	063
26	16	$\frac{9}{32}$	056	2.295	.058	2.36	.045	054
27	17	$\frac{7}{32}$	05	2.04	.049	1.99	.04	047
28	18	$\frac{5}{16}$	043	1.785	.042	1.71	.035	041
29	19	$\frac{3}{8}$	037	1.53	.035	1.42	.032	035
30	20	$\frac{15}{64}$	034	1.402	.032	1.30	.028	032
	21	$\frac{1}{2}$	031	1.275	.028	1.14	.025	1.03
	22	$\frac{13}{64}$	028	1.147	.025	1.02	.022	.922
	23	$\frac{11}{64}$	025	1.02	.022	.895	.020	.82
	24	$\frac{9}{32}$	021	.892	.02	.813	.017	.73
	25	$\frac{7}{32}$	018	.765	.018	.732	.015	.649
	26	$\frac{5}{16}$	017	.701	.016	.651	.014	.579
	27	$\frac{3}{8}$	015	.637	.014	.569	.012	.514
	28	$\frac{15}{64}$	014	.573	.013	.....	.011	.461
	29	$\frac{1}{2}$	012	.51	.012	.....	.01	.408

Sheet mills roll steel sheets to U. S. gauge unless otherwise ordered. Plate mills usually roll heavy plates, 3/16 and heavier, and light plate No. 8 to No. 12, to Birmingham gauge. In figuring weights of steel plates add to above the allowance for overweight, adopted by Association American Steel Manufacturers. Brass is rolled to thickness by Brown & Sharpe's American Gauge. Copper is rolled to thickness by Stubs' or Birmingham Gauge.

Vertical curve of Universal Cable Conveyor inclines to convenient work height, utilizes overhead space.



BUSCHMAN CONVEYOR costing only \$3800.00 SAVES \$7000.00 ANNUALLY



at
MINNEAPOLIS
Honeywell

Conveyor carrier has three hooks. Placement of regulator valve on any hook indicates operations to be performed.

A BUSCHMAN OVERHEAD CABLE CONVEYOR SYSTEM replaces former manual handling method at MINNEAPOLIS-HONEYWELL REGULATOR CO. with resulting savings of \$7000.00 annually on an investment of \$3800.00. This does not include recovered floor space, reduced aisle traffic, easier working conditions and increased production.

It is anticipated that the overall total savings that will be realized by Minneapolis-Honeywell improved production methods in this instance is approximately \$16,000.00 per year.

Smother, reduced-handling operations on continuous flow, high production lines with comparable savings are being accomplished with BUSCHMAN Overhead Cable Conveyors in hundreds of plants in all industries. Why not investigate the possibilities of similar savings in your plant operations?

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DISTRIBUTION

Continued

reversed. However, since these changes took place several times a week, each department was staffed with five truckers".

Costs Concentrated in One Department

Sheahan (4) in his paper, "Control and Organization for Materials Handling", shows that a department of "Physical Distribution" would not only produce important pecuniary savings, but, through the coordination of material handling with associated activities, would arrive at important organizational benefits as well. The most outstanding, non-monetary benefit to be derived would be the location of the entire material handling problem—namely, the handling of materials among the production processes as well as controlling their flow into and out of a company's plants or warehouses—in one organizational component. This concentration would mean that a company-wide approach would prevail in seeking a solution to the material handling and control problem. A secondary benefit that has substantial merit would emanate from the requirements for better scheduling.

(3) *E. H. Smedley: An Introduction to Cost Reduction Through Material Handling; Flow, May 1953; Page 107.*

(4) *John D. Sheahan: Control and Organization for Materials Handling; Conference on The Economics of Material Handling, Detroit, Michigan. September 17, 1953.*

One of the most pertinent reasons that can be advanced for the separation of Physical Distribution functions into a new organizational component stems from the ability to concentrate all such costs in an operating department responsible for such expenses. The obvious result would be that the manufacturing burden rate would be reduced by the removal of these cost elements as components of manufacturing cost. The same thing will happen in those companies that lodge shipping and warehousing functions within the



CONNECT TO BATTERY as Frank J. Thornton, foreman of the Albany Freight Transfer, Delaware & Hudson Ry. is doing, then . . .



TURN ON TIMER . . . and the charger takes over automatically. When charge has been completed, units turn off automatically.

Why Delaware & Hudson Railroad Uses G-E Chargers for Driver-Lead Trucks

Five nights a week for the past three years, two G-E Rectifier Battery Chargers with sequence charge control have charged four driver-lead trucks at the Delaware & Hudson Railroad Corp's. Albany Freight Transfer. "Excellent service" reports A. B. Cook, Freight Agent in Albany. "We need top efficiency for closely-timed freight handling, and we get it with G-E Rectifier Battery Chargers."

Easy to install, easily moved to more efficient locations, and simple to operate as well, G-E Rectifier Battery Chargers have no moving parts to wear out, require virtually no maintenance, and can be adjusted to charge different types and sizes of batteries. The high quality rectifier stacks assure long, economical life.

For more information, see your truck manufacturer's agent or G-E Sales Office. For literature write to Section 463-9, General Electric Company, Schenectady 5, N. Y.



DOUBLE CHARGING CAPACITY with G-E Sequence Control, for less than the cost of an additional charger. With one charger you can charge 2 batteries in 13 hours or less.

You can put your confidence in—
GENERAL  **ELECTRIC**

Circle No. 156 on Reader Service Card for more information



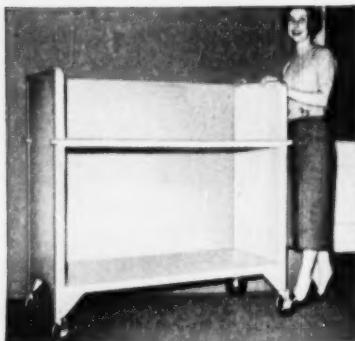
So—what a smart money-saving idea for you when they push THE LIGHTEST of METALS—

MAGNESIUM

Brooks & Perkins of Detroit—pioneer Magnesium fabricators with a Magnesium mill that rolls plate and sheet—has developed the

MINIMAX Pusharound

made of Magnesium sheet, plate, and extrusions—unbelievably light in weight. They save worker fatigue, time, awkwardness and accidents.



Push shelf merchandise



Push and load-into-trucks baked goods or candy

What do your people push that might be pushed easier and much more economically? Write or phone B&P for pictures, design, and price info. Tell us about your uses and present equipment, and let B&P engineers advise you about saving your Pushmoney with PUSHAROUNDS.

Brooks & Perkins, Inc.

Pioneer Magnesium Fabricators

1944 W. FORT ST. • TASHMOO 5-5900
DETROIT 16

Circle No. 28 on Reader Service Card

DISTRIBUTION

Continued

sales department, or any other department. Here too, there will be a reduction in such expense. This will mean, also, that the executive in charge of Physical Distribution must justify the outlays he is approving as producing the most efficient services for the expenditures incurred.

The effect of this on manufacturing and sales costs will be to remove an element of expense that could have hidden significantly undesirable trends and relationships in both manufacturing and selling expense. This will give top management a more sensitive control over the entire manufacturing and selling operation—or any other involved with material handling, a secondary benefit not to be ignored.

High Management Level Responsibility

If we set up a department of Physical Distribution, we should consider placing under its jurisdiction all activities that deal with the handling, storage, packaging and control over the movement of products in its various stages of manufacture, and include therein such staff functions as plant layout and budgeting of the capital facilities used to carry on such operations.

Many people may look at this proposal as something unworkable or too radical for real consideration. However, it is not too far in the past when the heads of departments hired their own operating personnel and decided the rates of pay such workers would receive. They also scheduled through their departments the product to be made, and determined when it would best fit into their operating schedules. There was also the time when department heads established the norms of efficiency for their own groups and used such information to justify their schedules or the raises in pay they would grant. This has been changed.

Today, numerous companies have personnel departments that take care of hiring workers, and in many companies the same departments handle grievances and

Lightest-weight metal in PLATE and SHEET

Magnesium

Production at the B&P Rolling Mill is flexible. Do you have special or unusual requirements? Odd-lot sizes and gauges?



Order from B&P anything you want rolled in Magnesium—the easily-lifted-and-carried but strong, stiff, rust-and-alkali-resistant metal. You can count on prompt delivery from the B&P Mill, F.O.B. Detroit.



There are many uses for this lightest-weight TREAD PLATE: dockboard, yard ramps, ladder treads, removable flooring, movable ladders and platforms, scaffolding, many others.

At your service: ideas and designs from the B&P engineers. Let them work with you on Magnesium parts or products, including fabrication and assembly.



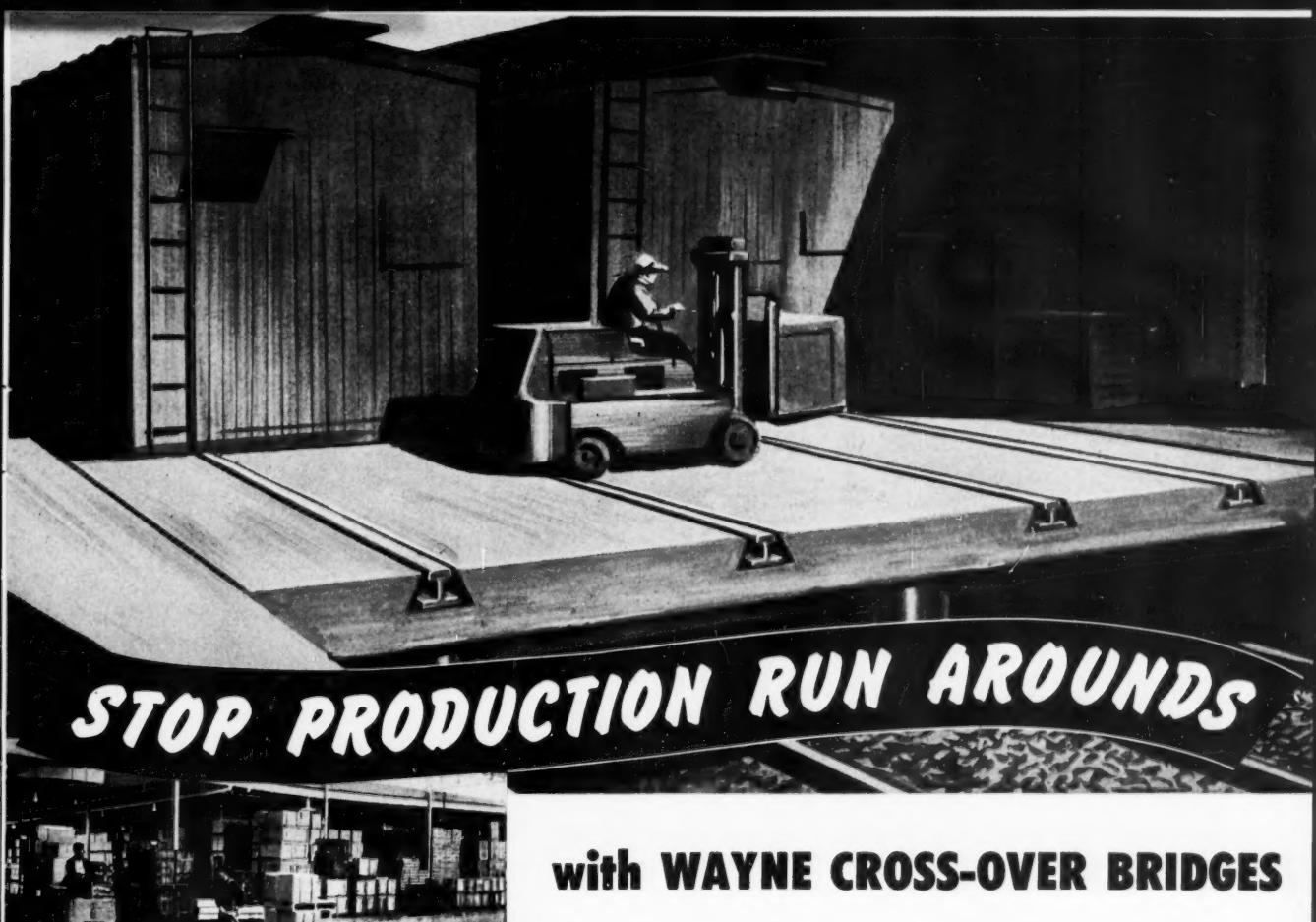
BROOKS and PERKINS, Inc.

Pioneer Magnesium Fabricators

1944 W. FORT ST. • TASHMOO 5-5900
DETROIT 16
Circle No. 29 on Reader Service Card

FLOW • APRIL, 1954

Circle No. 141 on Reader Service Card →



STOP PRODUCTION RUN AROUNDS

with WAYNE CROSS-OVER BRIDGES

Speed traffic in your plant! Cut out those costly, wasteful "run-around hauls" with Wayne Cross-Over Bridges. Miles and hours of unproductive travel can be turned into productive efficiency.

There's a Wayne Cross-Over Bridge to meet every location and need in your plant:

BASCULE TYPE—single and double, can be raised in a few seconds to clear road or railroad tracks.

PLATFORM TYPE—for single or multiple track installation to suit specific load requirements. Rails are recessed below floor line for smooth traveling. (See illustration top of advertisement)

Wayne Industrial Lifts are "precisioneered" in construction. Made to last for years without trouble . . . designed for easy servicing.

THE WAYNE PUMP COMPANY
SALISBURY, MARYLAND

TORONTO, CANADA



Bascule Single Type



← Write for new booklet on
materials handling.

COMPRESSORS

HOSE
REELS



LUBRICANT
DISPENSERS



INDUSTRIAL
PUMPS

NATION WIDE
SERVICE



**You Save Time and Money
When You Rely On "STANDARD CONVEYOR"**

EXPERIENCE

• The range, versatility and flexibility of Standard Conveyor equipment have been developed in more than 45 years of service to business and industry. You can rely on Standard Conveyor for the right type of equipment to best serve your needs.

For Production • Assembly • Packing Lines • Roller and Belt Conveyors



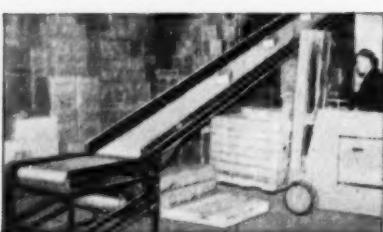
- To keep things moving—on production, assembly, processing or packing lines—mechanize your handling with conveyors. Standard furnishes all types—power and gravity, belt, roller, slat, chain, push-bar, sectional. Write—address Dept. FL-44

For Storage • Shipping • Receiving Depts. EXTENDOVEYOR portable Conveyors



- Compact, mobile, self-contained powered belt conveyor. Work it like an accordion—make it long or short—slope it up or down. Easily maneuvered in confined areas. Handles commodities up to 150 lbs. Write for Bulletin—address Dept. FL-44

For Lifting or Lowering • Floor to Floor the INCLINEBELT



- Move packages up or down from floor to floor continuously. Compact, simple to install and maintain. High continuous line load capacity for any floor elevations, belt widths of 8, 12, 14, 18, 24, 30 and 36 inches. Write for Bulletin 63-D, address Dept. FL-44

Send for Bulletin 63-D
describing the above and
other Standard Conveyor equip-
ment. Address Dept. FL-44

STANDARD CONVEYOR COMPANY
General Offices: North St. Paul 9, Minnesota
Sales and Service in Principal Cities



Standard

ROLLER • BELT • SLAT • CHAIN • WHEEL
PUSH-BAR • SECTIONAL
PORTABLE CONVEYOR UNITS:
HANDIBELT • HANDIPILER
INCLINEBELT • LEVEL BELT • EXTENDOVEYOR
UTILITY BELT-VEYOR • HANDI-DRIVE
VERTICAL LIFTS • PNEUMATIC TUBE SYSTEMS

Circle No. 123 on Reader Service Card for more information

DISTRIBUTION

Continued

lower level union contracts. The industrial engineering department now sets the production standards which not only guide production and scheduling but are also used for cost and budgetary control purposes.

If these functions, once thought of as necessary prerogatives of the production managers and department heads, have, during the past fifty years, been split off into separate organizational components that reach high in the organizational structure, it then can be justly said that a recognition of the problems surrounding the Physical Distribution of product—and the potentially large area of cost reduction inherent therein—makes it not only desirable but imperative that this function be set up as a separate organization component.

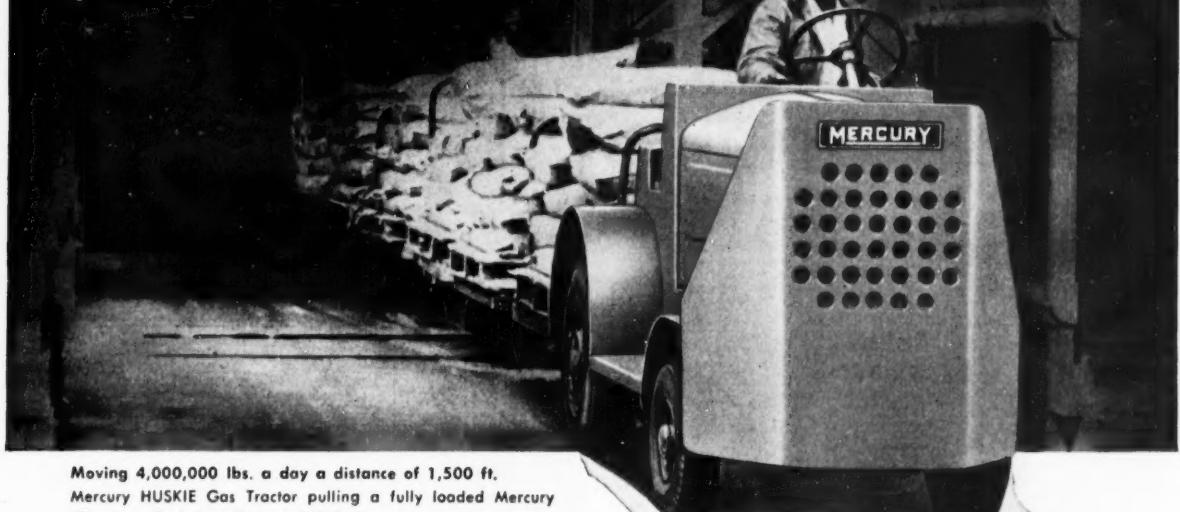
Potent Idea— Handle With Care

It should be recognized that the creation of a department of Physical Distribution is no panacea for corporate ailments. This organizational concept is offered as a means of bringing under stricter control an area of cost that has heretofore eluded such control. It is further suggested that important benefits will accrue to the organization that attempts to use them. However, like all potent ideas, this, too, must be handled with care.

A large or medium size company may be able to take hold of this idea and adapt it to its own organizational structure without too great difficulty. On the other hand, small companies may have to use extreme care in applying it.

In any case, one of the most important elements involved for all companies is to establish and encourage good lateral communication within its organization. If this is not achieved, then considerable trouble can be expected. However, with good lateral communication among the other departments and the new department of Physical Distribution, any company, large or small, instituting these ideas will increase its efficiency and profitability.

SHORT CUT TO A LONG HAUL!



Moving 4,000,000 lbs. a day a distance of 1,500 ft.
Mercury HUSKIE Gas Tractor pulling a fully loaded Mercury
"Trackless Train" of Type A-310 Trailers.

"Trackless Train" solves major handling problem at Louisiana sugar refining plant

American Sugar Refining Company of Arabi, Louisiana, moves packaged sugar from plant to dockside faster and at *lowest cost per ton-mile* with the Mercury "Trackless Train" method of horizontal material handling. Multiple loading and unloading of freight cars (formerly used) is eliminated.

Major operating advantages of the "Trackless Train": 1. Loads are always on wheels . . . readily movable by hand for short distances.



Unit loading the "Trackless Train"

2. The train is not confined to any fixed path . . . can go anywhere that the movement necessitates. 3. Trailers can be suited to the materials to be moved. 4. Material movement can be systematized and tied into production schedules by planning regular routes . . . dispatching trains at stated intervals . . . and centralizing control. Learn how the Mercury "Trackless Train" can speed material movement and lower cost in your plant. Write today.

MERCURY

FORK TRUCKS • TRACTORS • TRAILERS

MERCURY—the world's largest builder of industrial haulage equipment and originator of the "Trackless Train."

MERCURY MANUFACTURING COMPANY

4154 S. Halsted St., Chicago

Have a representative call
 Send copy of 44 page catalog illustrating and describing complete MERCURY line and the "Trackless Train" system of material handling.

Name _____

Company _____

Address _____

City _____

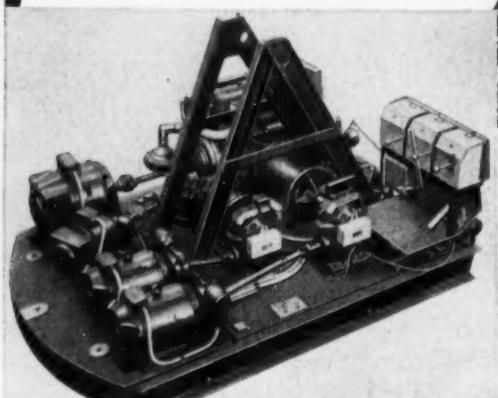
Zone _____ State _____

Circle No. 96 on Reader Service Card for more information

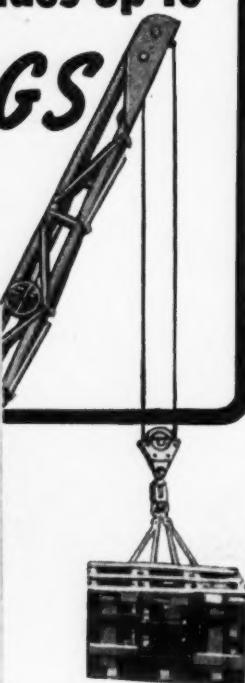
COLES

GAS-ELECTRIC

**TRANSMISSION Provides up to
70% SAVINGS
IN OPERATION AND
MAINTENANCE COSTS**



The crane with
a one year
warranty



- **No Gears to Shift**
- **No Clutches**
- **Perfect Torque Converter**
- **Gas: One Gallon per Hour**
- **Low Maintenance**
- **One Man Control**
- **Cantilever Boom**

Elimination of hundreds of Wearing Parts and the low fuel consumption all add up to Economy of operations and low maintenance costs. Precision Controlled gives you smoother lifting power. Combined with the Cantilever boom for getting into close quarters with full 360° swing. It's worth investigating. Write for name of your nearest distributor.

Box 942F, Joliet Illinois



**The Name That Carries Weight
In Material Handling**

Circle No. 174 on Reader Service Card for more information

STOCK OPERATIONS . . .

(Continued from page 73)

Knowledge of Receipts; (3) Comparison of Requirements and Receipts; and (4) Knowledge of Customer's Requirements.

The two elements of Item Requirement which should be instantly available are: (1) Orders on hand for each and every item in the stock room; and (2) Which orders of the totaled orders (total requirements) will be covered by total receipts.

Of particular importance to the operation of the Shipping Department, this information is also important to Sales and Production Control. It gives the Shipping Department priority and allocation information, making certain that, in the event of shortages, the desired customer will get the goods. But, more directly, it saves time!

It is equally important to have instant Knowledge of Receipts on hand for each item. A need to refer to stock shelves is not practical—in fact, it is apt to be most inaccurate, for previously allocated stock of unknown total amounts make a visible check completely unreliable.

There are many advantages in a means for instant Comparison of Total Receipts and Total Requirements, among which are:

1. Savings in Time and Handling: New stock does not necessarily have to be put away—it can be distributed to orders for immediate shipment.

2. Avoidance of Double Location and Double Handling: It isn't necessary to physically move stock to "save" it—it can be allocated on a record by a simple check mark.

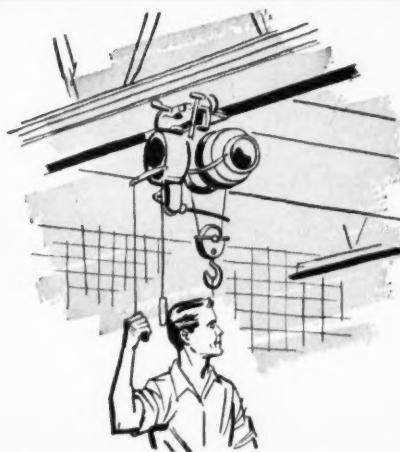
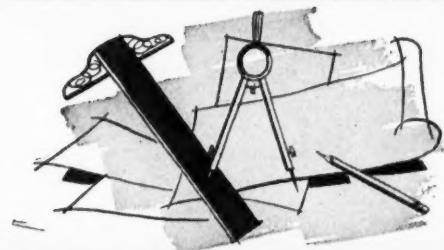
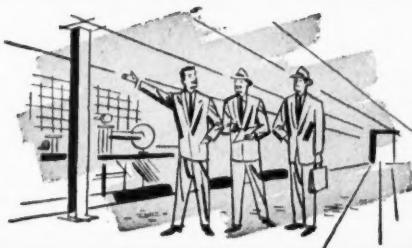
3. Basis for "Promise Date" to Sales: Priority can be listed against receipts, as can the history of the item—from which judgment can be made of a date for future shipments.

4. Basis of a "Shortage Report": To be sent to Production Control to show which items are required soonest.

5. Basis for Long Range Production Planning": The record will show requirements



OVERHEAD CONVEYING EQUIPMENT



3 simple steps for easy installation

Here's how Coburn brings you the advantages of modern overhead conveying equipment—yet with minimum investment and installation costs.

1. Our engineers make a detailed study of your particular plant layout.

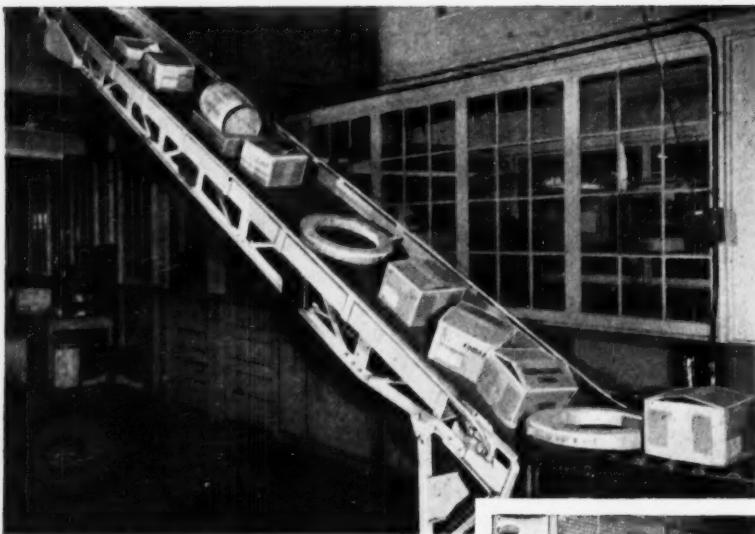
2. Complete, easy-to-follow plans based on your requirements and on our specialized engineering experience are submitted.

3. These plans plus Coburn's simplicity of design assure that your overhead conveying system can be set up quickly and economically—so simply in fact that your own plant personnel can make the installation, if you so desire.

Write for Catalog #220 to Coburn Sales and Engineering, 56 Sterling Street, Clinton, Mass.

THE COLORADO FUEL AND IRON CORPORATION—Denver and Oakland
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago
Detroit • New Orleans • New York • Philadelphia

COBURN PRODUCTS
Member of WICKWIRE SPENCER STEEL GROUP
THE COLORADO FUEL AND IRON CORPORATION
[CFI]



Typical packaged-materials-handling installation. Farquhar Conveyors stock, pile, store or move packaged materials from floor to floor faster and easier... make elevators unnecessary... cut all your materials-handling costs to the bone.

You Name It... We'll Move It!

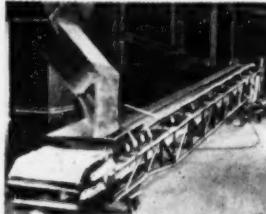
Sure, there are probably some things that Farquhar Conveyors can't handle—like elephants, or battleships. But by and large, no matter what your materials-handling problem, Farquhar Conveyors can solve it. AND solve it at the *lowest cost, greatest possible efficiency, and smallest possible upkeep!*

Big claims? Sure! But Farquhar can back them up! Case histories in our files prove that Farquhar Conveyors are designed better, stand up better, and deliver greater efficiency and versatility. If you'd like to read about some of these success stories, mail the coupon below for your free copy of "Owners Report."

Your particular problem may be similar or radically different from those in this booklet. Regardless, the same Farquhar experience, know-how and engineering skill that solved problems for people all over the world... can solve *yours!* A note on your letterhead will bring a Farquhar sales-engineer on the run—at no obligation, of course!



Bags of everything from fertilizer to cement move rapidly and continuously on Farquhar Conveyors the world over.



Bulk materials—chemicals, sand, stone, etc.—present no problem when they're handled by Farquhar Conveyors.



A complete line of Farquhar Roll-Free roller and wheel conveyors let gravity do the work for you!



Farquhar
CONVEYORS

**POWER-BELT
AND
GRAVITY
CONVEYORS**

FREE! "Owners Report"—a booklet of case histories of money-saving conveyor installations.

MAIL COUPON FOR YOUR COPY



THE OLIVER CORPORATION
A. B. FARQUHAR DIVISION
Conveyor Dept. A-06, York, Pa.

Gentlemen:
Please send me my free copy of "Owners Report."

Name _____

Firm _____

Address _____

City _____

Zone _____ State _____

Circle No. 58 on Reader Service Card for more information

STOCK OPERATIONS

Continued

ahead and previous history.

6. Prospective Picture to Sales: Activity from Sales and Production points of view can be shown on any item.

Customer's Requirements differ from Item Requirements. Total requirements for any customer simply constitute the total of all shipping orders for that customer. A knowledge of these is important because:

1. They allow combined shipments in fewer packages.
2. Inquiries from Sales are identified by Customer.
3. Credit inquiries are identified by Customer.

At Dexter Lock we use only two basic shipping forms—the Shipping Record and the Shipping Order & Invoice Form—plus an order Picking Ticket.

There is a Shipping Record for every different kind of catalog number except Specials. Cards are identified and filed by Catalog Number, and each shows Receipts and Requirements.

Date of receipt, quantity of lot, and added cumulative total are posted on this card. The cumulative figure is the total quantity of that item received since a particular time, say, inventory. Posting of receipts takes a very small part of the Receiving Clerk's time—this and his other functions are discussed later.

Upon receipt of new Shipping Copies of the Shipping Order Invoice, quantity for each item is posted on its respective Shipping Record with the cumulative total. Comparison is then made with total receipts of the same item. If total receipts of stock are more than total requirements, then allocation for the particular order is made by a check mark (✓) and the Shipping Copy is indicated "okay" for that particular item by noting the stock location as the aisle letter. (This is later used to write a picking ticket.) Aisle information is posted on every shipping record form. No other references need be posted.

On the other hand, if total receipts are less than total require-



FEEDS HOPPERS, CONVEYERS. Special high-speed reverse increases output on short runs between stockpile and hopper. Steel tracks stand up in cullet and other sharp, abrasive material.



EXCAVATES, LOADS TRUCKS. This busy crawler has the power to dig into hard-packed materials—and bring it out, a full cubic yard at a scoop. In handling light materials, an interchangeable two-yard bucket doubles its capacity.

New Trends in Mechanized Materials Handling WITH ALLIS-CHALMERS TRACTOR SHOVELS



STOCKPILES COAL, SILICATES, ANY BULK. Traction and flotation enable this crawler to work right up on a stockpile . . . allow it to spread and compact coal in thin, horizontal layers to eliminate spontaneous combustion.



HANDLES PACKAGED AND SOLID MATERIALS. With Lift Fork in place of bucket, the HD-5G skids, carries and stacks palletized loads weighing up to 4,000 lb. Stacking height beneath forks is 106 inches.

Crawler tractors — basic machines on earth-moving and construction jobs — are now solving more and more bulk materials handling problems in industry with hydraulic front-end shovels. And spearheading this new trend is the Allis-Chalmers HD-5G — thousands of which are now in use in plants of all types. This multi-purpose crawler combines power, traction and maneuverability with a wide selection of hydraulically operated attachments for a variety of material handling jobs.

Get the full story on how crawler tractor power and versatility can help mechanize your tough jobs. Ask your Allis-Chalmers dealer about the HD-5G and these three larger tractor shovels: 2-^{yd.} HD-9G, 3-^{yd.} HD-15G and 4-^{yd.} HD-20G. Light materials buckets range from 2 to 7 cu. yd.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

Here are a few of the other jobs the HD-5G and its attachments will handle:

Maintains yards and roads with bulldozer or shovel • Clears snow from parking areas • Moves machinery and other heavy materials with Crane Hook attachment • Spots railroad cars at loading docks • Digs trenches for pipe or foundation footings with Trench Hoe attachment

Circle No. 5 on Reader Service Card for more information



Here's the crane that assures 97.5% DRIVE EFFICIENCY



Full Vision Cab With Magnetic Control Provides a clear view of entire working area. Whiting design magnetic control assures smooth acceleration, improved accuracy, more protection for motors.



Herringbone Type Gears—Used by Whiting on all high speed reductions of drive units and in second reduction of hoist units for longer gear life, less impact and shock, improved lubrication!



5 to 450 Tons Capacity Whiting cranes cover the full range of handling needs for all industries. This 115 ton capacity Whiting Crane is used in steel mill service.

Circle No. 145 on Reader Service Card for more information

The double reduction drive, designed and used by Whiting on cranes up to 50 tons in capacity, provides an overall drive efficiency of 97.5 per cent . . . much higher than triple reduction types. Elimination of excess dead weight reduces power requirements and cuts operating costs. Single, easy to remove housing simplifies maintenance of entire drive unit!

In every Whiting crane, from hook to bridge end truck, you get the proved advantages of applied experience in crane manufacture . . . for handling power that's safer, longer lasting, easier to use and to service. Whether you're lifting 5 tons or 450 tons, Whiting can help you . . . write for complete information today!

WHITING CORPORATION 15659 Lathrop Avenue, Harvey, Illinois

Other Whiting Material Handling Equipment:

The Whiting Trackmobile,
Trambeam Overhead Handling Systems,
Whiting Electric Chain Hoists.

STOCK OPERATIONS

Continued

ments then—in addition to "Quantity", "Total", and "Customer's Name"—Control Number and Invoice Number must be posted. This reference information is used later when stock is received and allocated.

Thus, by posting reference information only on "short" requirements, over 50 percent of the posting time is saved per item. And since almost 50 percent of our items are shipped from stock, a total average saving of posting time would approach 25 percent by making this exception.

One Full-Time Clerk for Posting

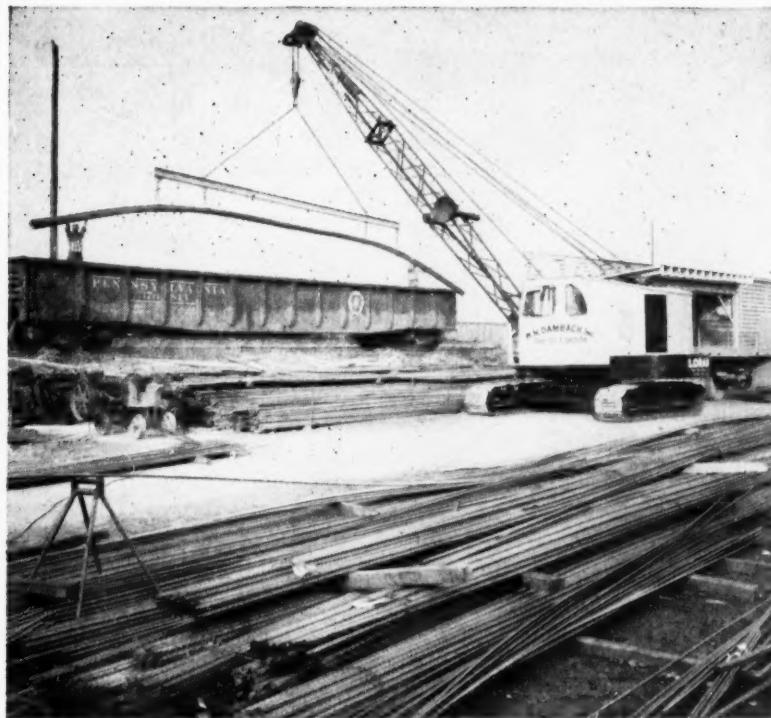
By actual test, over 600 items can be posted with all references complete, per clerk, per nine-hour day. With, say, 130 orders received per day and 5.7 items per order, we have 740 postings per day. Less 25 percent for short postings, the balance is 550 items to post per nine-hour day. One clerk full time is required for this function.

The shipping copy of the order invoice (carbon interlace form) is filed alphabetically by customer's name and under each customer by control order number. This procedure makes it possible to combine shipments to a customer, particularly on back orders, thus avoiding frequent small shipments to the same customer. The Shipping Copy is the Shipping Department's order to ship, and, as it is basis for requirement records, it leaves the department only when the last item is shipped. Notice of partial shipment is made on the Second Shipping Copy.

The System in Operation

Either of two actions puts the Shipping Department into operation: (1) Receipt of a Shipping Copy; (2) Receipt of Stock.

Upon Receipt of a Shipping Copy, the Requirements Clerk posts in the two variations previously discussed—*complete posting*, including all references when total requirements are more than total receipts; *partial posting* when total



HOW A LORAIN CRAWLER CRANE SOLVED A PROBLEM

W. N. Dambach Company, Pittsburgh, Penna., solve a complicated unloading problem using a Lorain Crane. By cutting loading time, service to customers was greatly improved. Lost time and car demurrage charges due to delays in unloading cars and expensive hand labor costs were considerably reduced and extra handling of steel rods eliminated by the Lorain Crane method.

"Recipe" for Unloading Rod

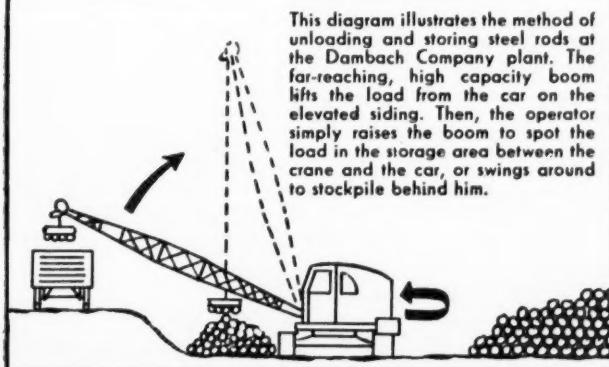
W. N. Dambach Company of Pittsburgh, Penna., solved a complicated material handling problem by the application of a recently purchased Lorain Crane, model TL25-KS. The problem, illustrated in the diagram below, was to unload 40' to 60' long reinforcing rod from cars on an elevated track and put them in yard storage as quickly and as inexpensively as possible.

The "recipe" for the solution was easy to find. A Lorain TL25-KS crawler crane, with a 40 ft. boom, was purchased. Its extra-long, extra-wide crawler gives it good, solid footing, enables it to reach far out and up, and, with a special bridle sling, easily unload bundles of rods weighing around 4800

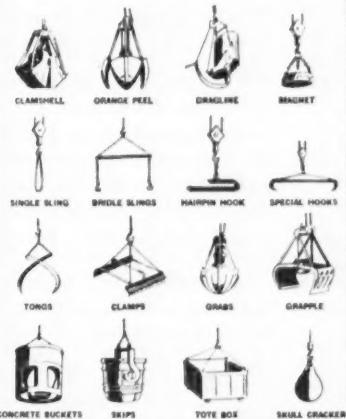
lbs. Then, it can swing completely around and stockpile the rods behind it on the far side of the roadway, or, using its independent boom hoist, simultaneously spot and hoist the load to stockpile rod between the aisle-way and the track. The Lorain is 35 feet away from the car, yet it unloads and utilizes maximum yard storage easily.

Perhaps your material handling work does not involve a similar unloading problem, but the same principles of long boom reach, crawler or rubber-tire travel and stability, precision load spotting, high stacking and fewer roadways to provide maximum storage area, can be applied to any size, type or shape material by Lorain Crane methods.

This diagram illustrates the method of unloading and storing steel rods at the Dambach Company plant. The far-reaching, high capacity boom lifts the load from the car on the elevated siding. Then, the operator simply raises the boom to spot the load in the storage area between the crane and the car, or swings around to stockpile behind him.



A FEW OF MANY ATTACHMENTS—
TO HANDLE SCORES OF MATERIALS

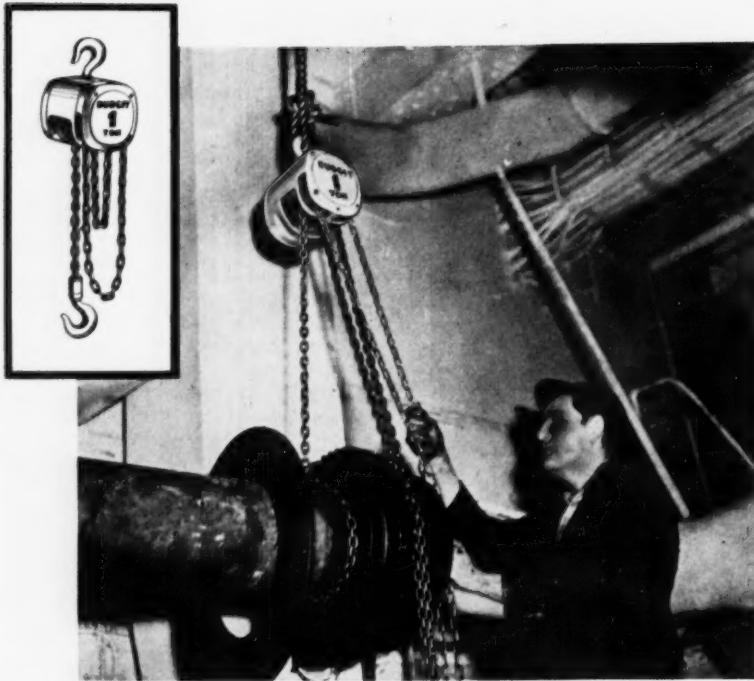


Lorain Crane methods can be applied to an almost unlimited list of material handling problems. The accessories shown above are available as crane attachments. Your nearby Theew-Lorain Distributor is familiar with material handling applications and can provide you with counsel, data and specifications concerning your individual material handling problem. The Lorain Crane line offers the most complete selection, on crawler or rubber-tire mountings.

THE THEW SHOVEL CO., LORAIN, OHIO

Circle No. 128 on Reader Service Card for more information

FLOW • APRIL, 1954



SAVES AS IT LIFTS . . .

***'Budgit'* ALUMINUM CHAIN BLOCK**

Here's a one-man hoist that really gets work done wherever emergency and spot-lifting jobs pop up. It's light, easy to carry, hang up, and operate. The $\frac{1}{4}$ -ton size weighs only 29 lbs., yet the full load can be lifted smoothly with a hand chain pull of only 25 lbs.

The 'Budgit' Aluminum Chain Block is the toughest lightweight ever built. Splined fastenings provide heavy-duty strength. No ordinary hacksaw can bite through the load chain. The hooks won't fracture when overloaded. The powerful automatic load brake acts instantly—makes lowering smooth, easy, safe. Anti-friction bearings throughout assure easy action, minimum wear. Spur-gears provide hoisting efficiency at its best. All working parts are sealed in the rugged aluminum alloy housing.

Save time, effort and money on all spot-lifting jobs. Invest in the 'Budgit' Aluminum Chain Block. Capacities: $\frac{1}{4}$, $\frac{1}{2}$, 1 and 2 tons. Your "Shaw-Box" Distributor will gladly give you complete details or write for Bulletin 398.



'BUDGIT' I-BEAM TROLLEYS enable your chain blocks to travel the load as well as lift it. Made of tough steel. Easily adjusted to fit various I-Beam sizes. Wheels equipped with ball bearings. Capacities: 500 to 4,000 lbs. Prices start at \$15.50. Write for Bulletin 390.

***'Budgit'* CHAIN BLOCKS**



MANNING, MAXWELL & MOORE, INC.
MUSKEGON, MICHIGAN

Builders of "Shaw-Box" and "Load Lifter" Cranes, "Budgit" and "Load Lifter" Hoists and other lifting specialties. Makers of "Ashcroft" Gauges, "Hancock" Valves, "Consolidated Safety and Relief Valves," "American" Industrial Instruments, and Aircraft Products.

Circle No. 89 on Reader Service Card for more information

STOCK OPERATIONS

Continued

requirements are less than total receipts.

Upon Receipt of Stock, the Receiving Clerk starts the shipping cycle.

Stock arrives by conveyor in (1) cartons (trailer hardware); (2) long packages (strap hinges, possible future items); and (3) trays (locks, latches, specials, cabinet hardware).

Less than 30 cartons of trailer hardware come into stock per day—none are shipped right through. The conveyor system handles these. Receipt of long packages is a rare occurrence, but the conveyor system is designed to handle them in the event that volume of this type increases. Trays arrive at a maximum of 714 per day, in groups of nine or less.

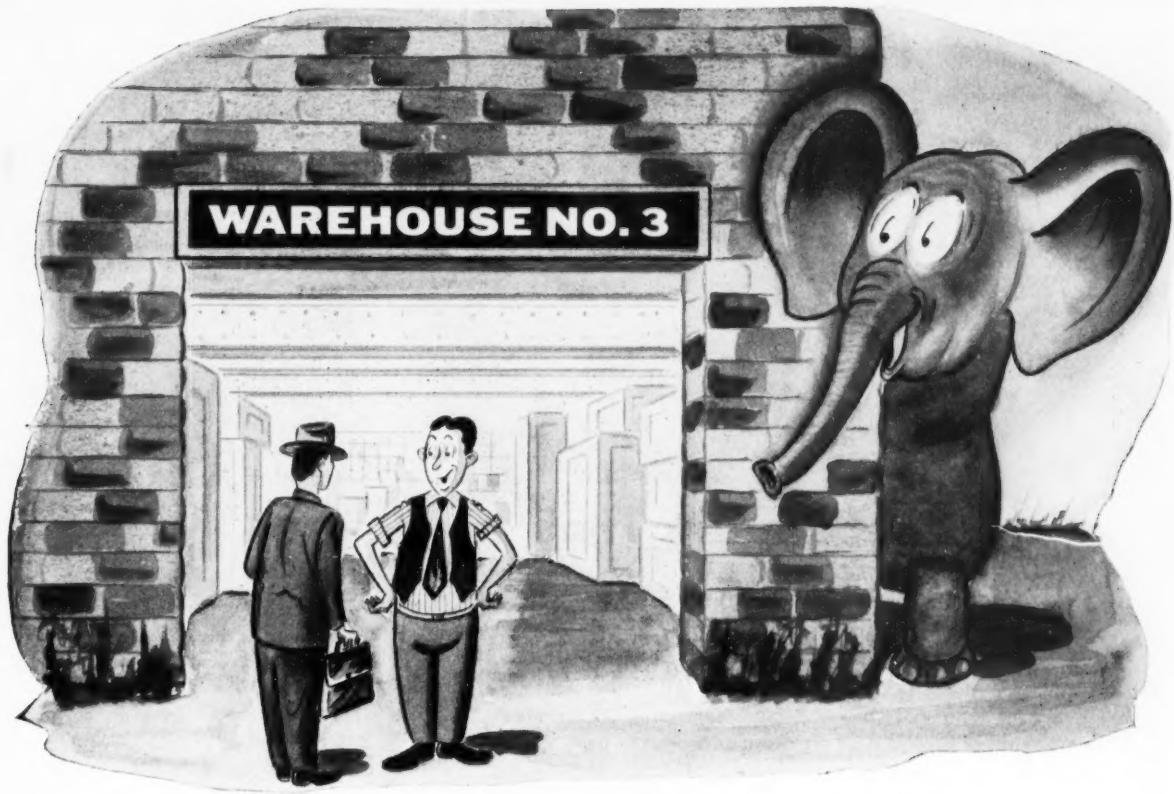
As stock comes in on the conveyor, it is held by the Receiving Clerk who identifies the lot by label and identification slip. He then posts quantity and cumulative receipt to the Shipping Record card. Next he picks the accumulated Total Requirement figure, on that card, which equals or just comes under the new Total Receipt figure, and pulls the unallocated shipping copies for that total—getting reference information (customer's name, control number) from the card. He makes the allocation check mark on the card, writes the aisle letter for that item on the Shipping Copies, and makes a decision, for each Shipping Copy, to ship or not to ship.

This decision can be made by the Requirements Clerk and/or the Receiving Clerk. When there is a sufficient percentage of items on the Shipping Copy indicated "okay", a partial or complete shipment can be made.

At this point other Shipping Copies for that customer are pulled out of file, and the possibility of a combined shipment reviewed.

If the decision is not to ship, Shipping Copies are filed by customer in Control Number sequence.

If the decision is to ship, then Item Picking Cards are made out



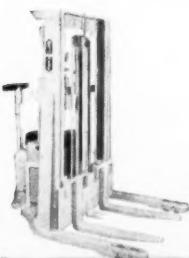
"MATERIAL HANDLING!...OH WE HAVE A VERY EFFICIENT SYSTEM"...

We hope our cartoon has managed a chuckle or two . . . however, there is also a serious side to this message.

Management across the country will be taking a long, long look at operating costs in 1954. A major factor in operating costs is Materials Handling. An inefficient, poorly planned system can "bite" deep into 1954 profits. If you are considering modernization or replacement of equipment . . . investigate the MOTO-TRUC line . . . They are the leaders of the industry . . . and like the Elephant . . . remember . . . THERE'S A MOTO-TRUC FOR EVERY PURPOSE.

Send for Bulletin No. 53

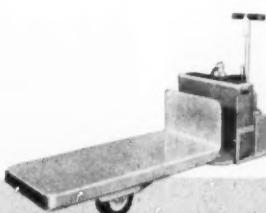
Hi-Lift "Walkie" type
3000-4000 lbs. capacity



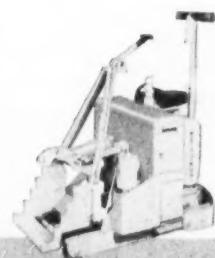
Pallet type "Walkie" truck
4000-6000 lbs. capacity



Platform "Walkie" type
4,000-10,000 lbs. capacity



Grip-All Tractor



The **MOTO-TRUC** *Co.*

Representatives in Principal Cities

1955 E. 59th St. • Cleveland 3, Ohio

Pallet . . . Platform . . . Hi-Lift Trucks

LARGEST EXCLUSIVE MANUFACTURER
OF "WALKIES"

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LOOKING INTO THE FACTS . . . LEADS INEVITABLY TO **MAGCOA** 



"Trailer-Loading Time Cut in Half... **WITH OUR MAGCOA PORTABLE YARD RAMP"**

—Reports Frank Gray, Traffic Manager, Universal-Cyclops Steel Corp., Bridgeville, Pa.

"We now load 400,000 lbs. of steel products in an 8-hour shift; have released two men for other duties—direct benefits of our MAGCOA Yard Ramp," says Mr. Gray.

Universal-Cyclops Steel Corporation was one of the first to cash in on the time-money-and-manpower savings possible with the revolutionary new MAGCOA Portable Magnesium Yard Ramp that permits truck-loading and car-loading from ground level.

Here's what you'll find when you look into the MAGCOA Yard Ramp—

- One man moves it.
- Hydraulic lift helps position it.
- You get fuller use of present facilities, lift trucks and operators.
- Bridge-type construction of rugged magnesium—by magnesium fabricating specialists.

- Capacities to 16,000 lbs. in five standard sizes.
- Exclusive MAGCOA quarter-round safety curbs and rounded end-castings protect workers, lift trucks and loads.
- Low cost—less than conventional stationary docks in most of U. S.
- Prompt delivery from mass-production factory.
- Enthusiastic users from Coast to Coast.

Look into all the facts! Send for literature showing how the new MAGCOA Portable Yard Ramp can speed ground-level loading for you.

At the same time, look into how MAGCOA light-weight, heavy-duty Magnesium Dockboards can speed your dock-level loading. Use the handy coupon.



Yard Ramp features one-man positioning



Magcoa Yard Ramps speed car-loading, too

MAGNESIUM COMPANY OF AMERICA MATERIALS HANDLING DIV., EAST CHICAGO 1, IND. — Representatives in Principal Cities

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HOUSTON 17,
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8922 W. 25th St.
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Russ Bldg.

Please send Yard Ramp Literature Dockboard Facts

Name & Title _____

Company _____

Address _____

City-Zone-State _____

Circle No. 89 on Reader Service Card for more information

STOCK OPERATIONS

Continued

for each item to be shipped out of stock. These cards are completed by the Order Assembly Clerk after he receives the okayed Shipping Copy. Two elements on the Item Picking Card are provided with reference to the Shipping Copy. They are Quantity of Item to be picked and Catalog Number and Finish of the item.

The aisle number of the stocked item is circled, as is the Spur Number where the order is to be assembled, by the Order Assembly Clerk. When stock is to be shipped right through, he receives his shipping copy from the Receiving Clerk with the lot of one item of the actual stock to be shipped. This lot is held at the Order Assembly Clerk's convenience on the conveyor bank. He also receives the shipping order of items to be selected completely from stock.

The Order Assembly Clerk selects an open spur by glancing at the 39 clips on the control board. Those spurs already scheduled for an order will have a Shipping Order held under their respective clips. He then finishes or completely makes out the Item Picking Cards. The clerk (1) slips the shipping copy under the proper clip on the board, (2) pulls a deflector lever for the proper spur, (3) pushes incoming load (if shipment originates with receipt of stock) onto the live roller conveyor, and (4) sets aside the Item Picking Cards. (When enough cards have been accumulated to make a picking trip efficient, the stock picker is notified by intercom—if he has not previously picked up cards.)

Calculation of Picking Cycle

Referring again to the hypothetical figure of 465 orders per day, and upping it the 30 percent allowed by the new system, we can ship 660 items per day. And of the 2½ items shipped per order, one goes right through and 1½ must be picked from stock. Also, we will now ship 240 orders per day.

It will therefore be necessary to pick 360 items per day from stock,

High lift, Big load capacity, Wheeler speed charge hoppers at lower cost

Bin-batching costs drop fast when mixing plants load hoppers with high-lift, long reach, fast-moving MM Wheeler-Loader units.

Loader attachments, built specifically for 30 hp. RTI and 57 hp. UTIL Minneapolis-Moline Wheelers, reach *up* to load the highest hoppers, *out* to fill trucks, cars, conveyors.

With exclusive shuttle speeds and instant reversing, the UTIL combines high rate of travel and hydraulic pump efficiency to make each load-and-dump trip in shortest possible time.

Reserve Wheeler power and greater torque at moderate rpm keeps Wheelers operating in heaviest going. For short, fast maneuvering in congested areas, Minneapolis-Moline offers heavy-duty power steering



at lower cost. For any loading job, call in your Minneapolis-Moline dealer-distributor. Let him demonstrate how you can save money by replacing expensive, less maneuverable equipment with lower-cost time-saving Minneapolis-Moline Wheeler units.



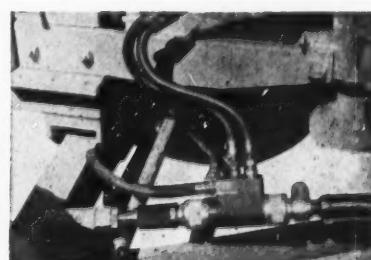
MINNEAPOLIS-MOLINE
Minneapolis 1, Minnesota



Owner of this St. Paul, Minn., mixing plant replaced two loader outfits with this MM Wheeler-Loader unit, loads bins for less.



Wheeler maneuverability plus good bucket control speeds up surface mixing operations. Shuttle gearing spots loads in half the time.



UTIL Wheelers available with hydraulic POWER-flow steering for maximum operating ease. Built-in safety features insure constant control.



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HAULING LIGHT MATERIAL



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Autoette has designed especially for American industry two electric pickup trucks that provide a new approach to light materials handling problems . . . the $\frac{1}{4}$ -ton pickup, ideal for moving personnel — maintenance men, watchmen, mail girls . . . the $\frac{3}{8}$ -ton truck for tools, supplies, equipment. Both are the last word in efficiency, safety and economy. Send for free information on how Autoette serves your industrial needs.

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Please send me information on how Autoette pickup trucks can serve my particular industry.

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Title _____
Company _____
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Circle No. 167 on Reader Service Card
106

STOCK OPERATIONS

Continued

or 40 items per hour for a nine-hour day.

In the nine-hour day, 27 orders will be assembled per hour. Since one spur per order is allocated, a spur must be filled and emptied each $1\frac{1}{2}$ hours. The picking cycle is therefore $1\frac{1}{2}$ hours, and the stock man must pick 60 items on one walk through the stockroom. He will make six walks per day and pick $6\frac{2}{3}$, or seven, items per aisle. (If an aisle order carrier is installed, it will be released to the picker when it contains seven item cards.)

Instead of five pickers, the new system will call for just one man to work the stockroom. Walking down an aisle, he simply pulls full trays out, slips the picking card in the tray clip, puts the tray on the wheel conveyor, and gives it a push. Picking partial trays, he pulls out empties (stored upside down throughout the stock room) and loads on the conveyor. In a nine-hour day he moves 360 items, lifting up or down only three feet.

In actual test, we have moved 2700 fully loaded trays over eight feet horizontally and two feet vertically in $6\frac{1}{2}$ man-hours, or 420 trays per hour. Thus the one man easily takes care of all stock picking.

Stock Storing System

Stock in excess of requirements and that allocated for future shipments is switched, by the Receiving Clerk, to the conveyor line running into the stockroom. Stock is automatically braked halfway down the incline. The stockman releases the brake so that stock flows to the first curve in the into-stock line, where it is again automatically braked. The stockman examines trays and pulls a ring attached to a chain which swings down a switchgate onto the in-stock line. He releases the brake, and stock rolls into the proper aisle to be put away at a later, more convenient time. This switching is accomplished without any walking. Putting stock away is a simple operation in which the conveyor carries trays into position

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FLOW • APRIL, 1954

The Most Important Safety Development in Exhaust Fume Control . . .

Death to Carbon Monoxide and Hydrocarbons

The OCM Catalytic Exhaust A Houdry Catalyst Development

A death sentence for two killers — a proven answer to one of industry's most critical problems — that's what the OCM Catalytic Exhaust means to you today.

You know the deadly risk of carbon monoxide wherever gasoline-powered equipment is used indoors. The hydrocarbons in exhaust fumes are even more dangerous. Now, with the OCM Exhaust, both these threats to life and health can be easily, economically ended.

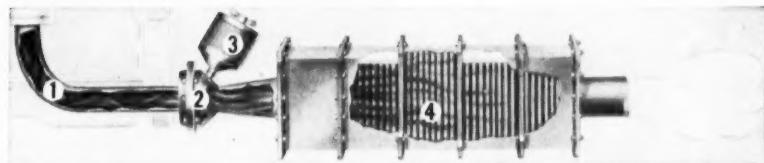
Now, with the OCM Exhaust, you can operate lift trucks, tow trucks, loaders, auxiliary generators — *any type of machinery run by an engine burning non-leaded gasoline* in even the most closely confined areas — continuously, efficiently, safely. And *without the cost of extensive ventilation systems*.

The OCM Catalytic Exhaust eliminates 95% or more of the carbon monoxide — 99% of the hydrocarbons — from any engine in which you use non-leaded gasoline. Connected to the engine exhaust manifold, strong, compact catalytic units "burn out" harmful, foul-smelling fumes and odors before they reach the air you breathe.

Think of the significance. The ex-

NOTE. This company makes catalysts for air pollution control and waste heat recovery in drying ovens, incinerators, oil refineries, and many other industrial operations. Write for details.

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(1) Connection to engine exhaust manifold. Cubic inch displacement of engine determines number of catalytic units needed. Almost any size engine can be equipped. Tested and listed by Underwriters Laboratories, OCM is strong—rupture-proof under explosion. • (2) Venturi or air inlet connected directly to exhaust manifold flange. Introduces fresh air into exhaust gas stream to provide necessary oxygen. • (3) Fresh air filter prevents contamination—keeps foreign matter from entering exhaust system. • (4) Catalytic units here eliminate carbon monoxide, hydrocarbons, fumes and odors. Units give 2000-2500 hours of trouble-free service—can then be quickly, economically replaced. OCM Exhaust imposes no more back pressure than standard muffler—often less. A thermocouple connected with pyrometer on instrument panel keeps constant check on catalyst efficiency. Non-leaded gasoline must be used.

haust fume problem is great and growing. Now, with the OCM Exhaust, you can have cleaner, safer air inside your plant. For your employees this means an end to fume-caused headaches, eye irritation and nausea — perhaps serious undermining of health. For you it means all the advantages of higher employee productivity and morale.

Easily Installed By Your Own Mechanics

The OCM Catalytic Exhaust is designed to replace the standard gasoline engine muffler. It is available as original equipment from leading concerns such as *Clark Equipment Co.* — or can be fitted right on your present gasoline engines. Your own mechanics can install it quickly, easily, without changing clearances.

The OCM Catalytic Exhaust is today a proven success — used by many of the country's biggest industries.* Developed by the noted inventor, Eugene Houdry, who discovered the catalytic cracking process and who

has given half a lifetime to catalytic research, the OCM is the most important safety development in exhaust fume control ever produced. Wherever you operate gasoline-powered equipment indoors — even part time — you have a real, a critical, need for the OCM Catalytic Exhaust. Write now for complete technical information and name of nearest supplier.

* Names of users on request

OX-Y-CATALYST, Inc.
WAYNE, PA.

Send in the coupon below for new illustrated folder on the OCM Catalytic Exhaust, and complete technical information.



OX-Y-CATALYST, Inc., Wayne, Pa.

Send me complete technical information on the OCM Catalytic Exhaust and name of nearest supplier.

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Firm Name _____

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DICO MODEL 65R

850 lb. Capacity
Shipping Weight
45 lbs.

You can't beat STEEL for STRENGTH . . . and you can't beat the DICO 65R for all-steel LIGHTWEIGHT construction. Here's the type hand truck that you've been looking for . . . a "light" all-steel truck that is built for load bearing strength and abuse. Strong steel "box-type" side shafts for maximum strength. The DICO 65R Truck is equipped with the finest easy rolling DICO "H-D" molded-on rubber-tired, roller bearing wheels.

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WRITE FOR CATALOG

"ALL-STEEL" TRUCKS
LONGER WEAR
and
MAXIMUM STRENGTH

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NO HAND TRUCKERS NEEDED

With the POWER-CURVE-LOADER on the job your bags flow swiftly all the way from packing station to loading spot inside box car or truck without a hand laid on 'em! Cut loading crews to one or two men.

Swing it left or right while running

Finger-tip controls make it self-propelled—self-retracting and reversible. Stackers never lift a bag . . . merely swing them from discharge plate to the stack.

A POWER-CURVE-LOADER PAYS FOR ITSELF IN MONTHS.

POWER-CURVE CONVEYOR CO.

2185 SOUTH JASON STREET • DENVER 19, COLORADO

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STOCK OPERATIONS

Continued

and the man merely lifts them into the bins. One man can handle 350 to 400 full trays per day plus half that number of empties, which are loaded throughout the stockroom upside down at convenient positions for picking partial trays.

Packaging for Parcel Post and Freight

It is the Order Assembly Clerk who makes the decision as to whether a shipment will go Parcel Post or Freight. When he has checked the order, he notes the type of shipment desired, puts the shipping order in the first tray of the order, swings the conveyor gate into the proper line and releases the brake.

The Parcel Post Clerk releases the mid-line brake on his gravity conveyor, allowing a group of trays to come down to the brake at the Parcel Post bench. He selects a carton or package (packages), and empties boxes down from the tray to the bench. Usually there is only one package per order, but in the exceptional case where there are more, the packages can be loaded close together on the "hold" conveyor going to the scales.

After labeling, packages travel by gravity conveyor to scales, and the Parcel Post Clerk pushes empty trays against the backboard, from which they drop to the empty-return conveyor.

Freight Packaging and Strapping are started by the Carton Maker, who controls the release on the brake of the gravity freight conveyor as he needs work. Judging from the stock in the trays for one order, he:

1. Selects and metal stitches cartons.
2. Locates stencil and stencils the label.
3. Places empty cartons on the lower line and moves cartons, trays and shipping copy to the packaging position.

The Packer then:

1. Lifts small boxes down from the tray into the carton.
2. Pushes full cartons to the strapping position.
3. Pushes empty trays against



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Britain's post-war need for greater and greater production has made her materials handling industry one of the largest and most progressive in the world.

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Conveyors, elevators, hoists, stackers, cranes, mechanical loaders and shovels, fork lift trucks, industrial trucks, coal handling plants, overhead runways, aerial ropeways, grain handling plant, wagon tipplers, pneumatic installations and ancillary equipment.

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So vast is this exhibition that ample floor space is provided for much of the equipment to be demonstrated under working conditions.

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Full information service; free consulting bureau; easy access by special staircase to first floor exhibits; overseas visitors' reception & lounge; industrial cinema; post office.

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Please send me the 1954 Exhibition Brochure with details of Convention, admission, etc.

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This WILSHIRE

POWER SWEeper
SAVES \$3800 PER YEAR—
YEAR AFTER YEAR



Back in 1951, it required 3 regulars and 2 part time sweepers to keep this Packing Plant clean. Since then, 1 man with a WILSHIRE Power Sweeper cleans some

79,000 sq. ft. of warehouse several times a day, plus approximately 60,000 sq. ft. of yard area as well as 1,000 feet of street curb area... and he does it in 6 hours per day! The result is a cleaner plant at a saving of \$3,800 per year...year after year.

Your profits for '54 will depend on savings you can effect in operations and maintenance. Put a WILSHIRE Power Sweeper to work for you and start saving now. Write for data on Wilshire money-saving performance, and the name of your nearest WILSHIRE Distributor.

WILSHIRE POWER SWEEPER COMPANY
526 W. CHEVY CHASE DRIVE • GLENDALE 4, CALIFORNIA

IN CANADA: PLANT MAINTENANCE EQUIPMENT CO.—VANCOUVER—TORONTO—MONTREAL

Why they buy NEFF & FRY Storage Bins

In the photograph you see how the diagonal-ended staves of a Neff & Fry Storage Bin are laid up. They are grooved and beaded to lock together. Each course is encircled with as many galvanized steel rods as needed to withstand the thrust of the load.

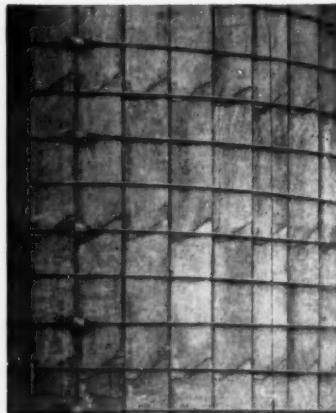
Our bins (often termed silos or tanks) are used by scores of America's leading companies for handling more than 80 kinds of flowable bulk materials; notably, cement, coal, clay, grain, gravel, ore, sand, wood chips.

The reasons:

Formed under tremendous hydraulic pressure, the staves are rocklike in strength and density. They do not spall, rust, or burn.

Since the walls are only 2½" thick, the bins have great capacity in relation to outside diameter; no wasted ground area.

Despite the thin walls, the structures have sufficient load-bearing ability to carry heavy superstructures without additional supports.



Our wide experience enables us to make valuable suggestions regarding materials handling systems and equipment.

If you want to invest a few minutes in mighty profitable reading, ask for our folder, "Bins with the Strength of Pillars."

THE NEFF & FRY CO.
110 Elm St., Camden, Ohio

NEFF & FRY

**SUPER-CONCRETE STAVE
STORAGE BINS**

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STOCK OPERATIONS

Continued

the backboard, from which they drop to the empty-return line.

The Strapping Operator swings cartons into position and puts two straps on each.

A belt conveyor takes all cartons up to the Shipping Department, where the Shipping Clerk refers to the weights and destination from the Shipping Copy, and, with his knowledge of truck lines and transportation rates, he is able to confirm or change earlier instructions made by the shipper. (If packages have to be returned to the packaging floor for any reason, the reversible belt is used—after a warning has been issued via the intercom system.)

He then fills out the Bill of Lading and files it in the basket for the proper truck line. Shipments are then spotted in locations for each line.

Communications Vital to System

In the over-all planning of the stock control and shipping method, two-way communication equipment was spotted at each point where it might be required. This has turned out to be a vital part of the system, saving untold hours of walking and considerable effort and frustration. For instance, the Order Assembly Clerk can talk to a person in any location in the stockroom for a quick inventory check or picking correction.

Gains of the complete handling system, of course, include the ability to operate the stock part of our business with fewer personnel. But, most important, it has integrated and coordinated our over-all operations to the point where we can take all peak loads in stride, provide better and faster service to our customers, and keep handling cost at near to absolute minimum.

For the photos which illustrated this article, FLOW thanks Metzgar Conveyor Company, which participated in the engineering of the system and installed the conveyor equipment.

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MATERIAL HANDLING EQUIPMENT



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You will see why the FLOW DIRECTORY is known as industry's "most thumbed" source of information about material handling, packaging and shipping equipment and machinery. Regardless of what questions may come up concerning a piece of equipment, its manufacturers, trade names, or where it can be purchased—you'll find the answers in the FLOW DIRECTORY.

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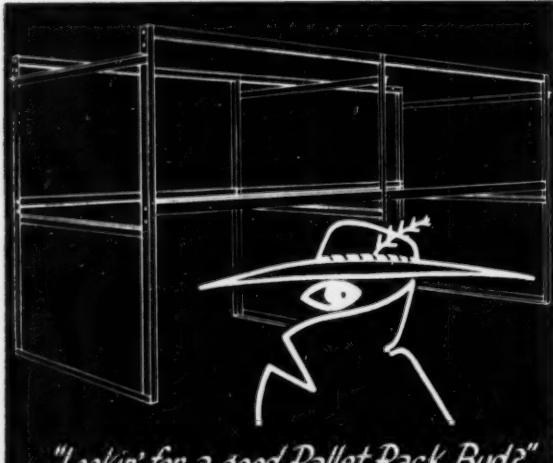
THE CHAS. WM. DOEPKE MFG. CO., INC.
ROSSMOYNE, OHIO

"Down-to-Earth" Trailer Bed Lowers for Simplified Loading



A new trailer, which permits easier loading and unloading, is being distributed nationally by E-Z Loader, Inc. of Cleveland. Said to be reasonably priced, the unit operates both as a trailer and an unloading dock. It becomes a ramp simply by pushing a button inside the cab. Under development for almost six years, and being released this month, the trailer features a torque-tube suspension axle, with either an electric or hand hydraulic mechanism which allows the bed of the trailer to retract to the ground. There are no springs on the patented unit, and capacities of 2000 to 40,000 pounds are available.

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Low-Cost
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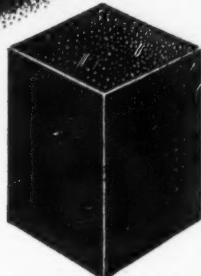
14620Q KESWICK ST., VAN NUYS (Suburb of Los Angeles) Cal.
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FLOW • APRIL, 1954

PACKAGING AND SHIPPING SECTION

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An Easy Index to This Month's Advertisers

Are you looking for a particular type of packaging and shipping equipment? Listed below are advertisers according to type of product they are advertising in this issue. We have attempted to make your job a little easier by listing them as often as possible. To use this index, find the type

of product in which you are interested . . . turn to the advertisers listed under that product . . . circle the correct numbers on the reader service card, mail it, and you'll get complete information in a jiffy.

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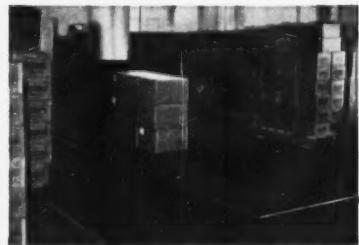
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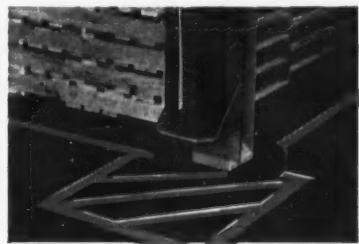
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SET TRAFFIC PATTERNS to avoid fixed equipment; delimit work areas. "Scotch" Brand Plastic Tape No. 471 resists wear and abrasions, is long-lasting in even the heaviest traffic and manufacturing areas.

Brainard Steel announces...

NOW! STEEL STRAPPING and

The first complete



Brainard's complete line of steel strapping, tools, and accessories covers over 1500 items. Thus you can obtain the right materials for every application from one source. A vital part of Brainard service is recommending and demonstrating proper strapping methods. Here Brainard field engineer Mark Rector demonstrates steel-strapping a heavy box—a job ideally suited for steel strapping, which secures, reinforces, and prevents damage or pilfering.

GET UNBIASED RECOMMENDATIONS

- The Brainard Strapping System has been expanded to include a complete line of strapping tapes, both pressure-sensitive and gummed, as well as dispensers for all applications. *For the first time* you can fill all your strapping requirements—whether steel strapping or strapping tape—from one source.

Only your trained Brainard salesman is in position to give you *completely unbiased recommendations*—and advise you with authority which method is best for your particular applications.

The use of steel strapping has grown tremendously in recent years, yet tape methods now have a definite place in packaging operations. Most shipping departments can use *both* steel strapping and strapping tape to advantage. Since Brainard offers both methods, you can depend on the strapping recommendations and complete service offered by your Brainard salesman.



Get a
Brainard Strapping Analysis

STRAPPING TAPE from one source!

strapping service

STREAMLINE YOUR PURCHASING

● You probably have a variety of packaging and materials-handling operations, some of which call for steel strapping, and others for strapping tape. You can now fill *all* your requirements from one responsible source. When you use the services of your Brainard salesman, you can consolidate orders, simplify purchasing, and save your own time.

Your Brainard salesman is factory trained in handling and shipping methods. He's equipped to study your operations, to make recommendations on the best system, and to give your personnel *on-the-job* demonstrations. There's a Brainard salesman near you—we have offices throughout the U.S. and in Canada. Consult your telephone directory, or send the coupon now for information on Brainard Strapping Tape, or for an analysis of your packaging problems.

Brainard can help you
develop strapping systems for

PACKAGING BUNDLING
PALLETIZING EXPORT CRATING
CARLOADING WAREHOUSING



Brainard is the only prime source for *both* pressure-sensitive and gummed strapping tapes. Both are filament-reinforced to provide high tensile strength, and are designed for strapping applications. Your Brainard salesman can recommend and supply the proper dispensers for all applications. Here field engineer Mark Rector demonstrates reinforcing a carton with strapping tape, typical of many applications where tape may be the preferred method. Brainard has devoted over a year's research in testing of different tapes and taping methods, and actual shipping tests in cooperation with railroads.

Brainard Steel Division, Dept. X-4
Griswold Street, Warren, Ohio

I would like a Brainard Strapping System analysis.
 Please send booklet on Brainard Strapping Tape.

Name _____

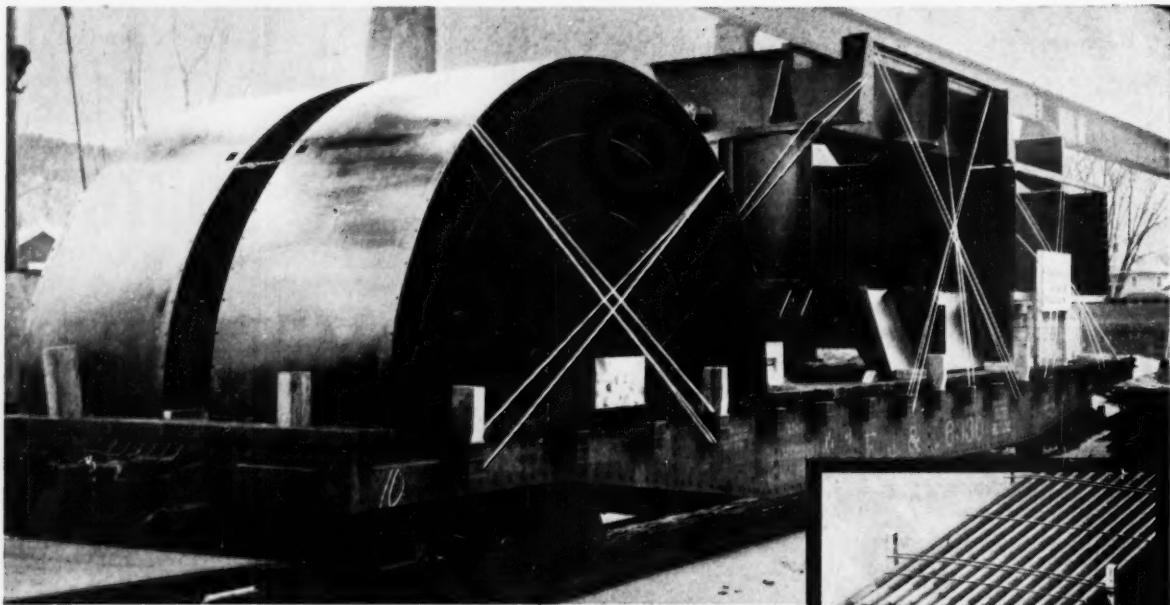
Position _____

Company _____

Address _____

City _____ State _____

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GERRARD

Ties anything you've ever seen

• Regardless of the size of the bundle—pocket-sized package or cumbersome pallet of castings—Gerrard has a tie for it in the size and type you need. And as for shape, Gerrard Round Strapping turns any corner smoothly, ties any shaped crate or bundle snugly and securely.

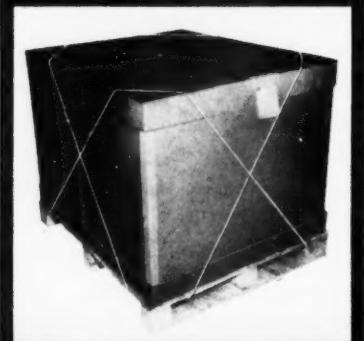
In addition to doing the best job of tying, USS Gerrard Strapping offers you real three-way economy. Man hours are reduced since neatly palletized bundles of machine parts, forgings or steel pipe are easier to handle, easier to stack.

Inventory is simplified, too. You need never recount the units in a bundle once they've been tied together, whereas loose pieces need constant retallying every time they are moved.

Last but not least, you can make Gerrard your *single* source of supply for both Round and Flat Steel Strapping. You'll simplify your paper work, using one purchase order for all your strapping. And by combining shipments of Round and Flat Strapping in a single carrier, you'll realize an additional savings in freight charges.

Contact a Gerrard packaging engineer now. Let him advise you about the tying method best suited to solve your tying problem, safely and economically. His advice is free, a service to you. Meantime, send for these free brochures—USS Gerrard Heavy Duty Flat Steel Strapping System, and USS Gerrard Round Steel Strapping System.

GERRARD STEEL STRAPPING DIVISION, UNITED STATES STEEL CORPORATION
2937 West 47th Street, Chicago 32, Ill.



USS GERRARD

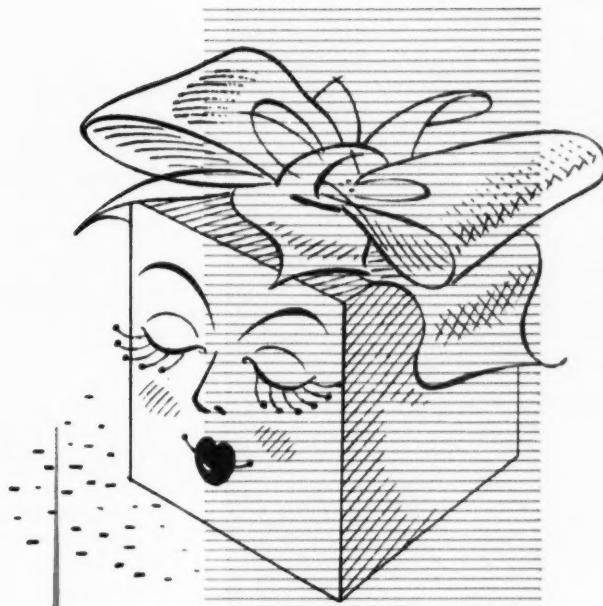
Round Steel **STRAPPING** *Flat Steel*



UNITED STATES STEEL

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"Fancy" or
"Functional" . . .



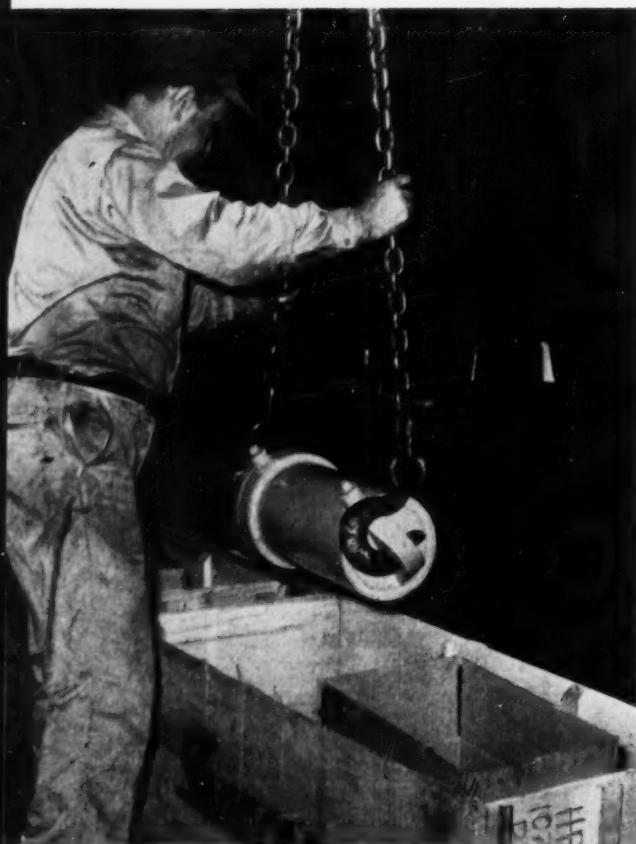
Packaging Is More Than Skin Deep

PACKAGING involves a great deal more than the design and construction of an attractive unit. True, one cannot over-emphasize the importance of an item which virtually radiates sales appeal during the time it rests on the dealer's shelf awaiting a buyer. That is an end toward which careful design and continuous research should be devoted by sales promotion and advertising professionals.

There is another, equally important, aspect of packaging, however; one which deals with an entirely different problem. For, "under the skin", packaging becomes a responsibility of the manufacturing and warehousing divisions of any firm, and is usually found to be a function which is actually part of, or is affected by, material handling.

Not too long ago, the general practice was to approach separately the problems of packaging and those of handling. Far too often the packaging man and the material handling man operated without concern for one another. Feelings of beligerency between the two were not uncommon. Efficient handling was impaired: (1) because packaging procedures, and packages themselves, were not fitted to handling methods used; or (2) because handling methods, having been developed without consideration for packaging problems, were a deterrent to good and economical packaging. The effects, economy-wise, often were felt throughout an organization, and even as far as the customer's receiving dock.

On the following pages, FLOW emphasizes the importance of three "more-than-skin-deep" aspects of packaging: (1) Good handling is required for efficiency in getting a product into its package; (2) Conversely, good packaging procedures permit higher handling efficiencies; (3) Packaging must provide products with protection during all handlings. Although the first two aspects are so different in their approaches that they may appear to contradict each other, it will be seen that nothing is further from the truth. It is only through a combination of all three that one can insure a rugged framework on which to build all packaging and shipping activities.



THESE ARE HANDLING
OPERATIONS . . .

MECHANICS OF PACKAGING (getting the product into the package) requires material handling know-how as the photo above illustrates. Hoist and chain sling, correctly used, have provided an easy, safe and inexpensive method of moving heavy cylinders into shipping containers.

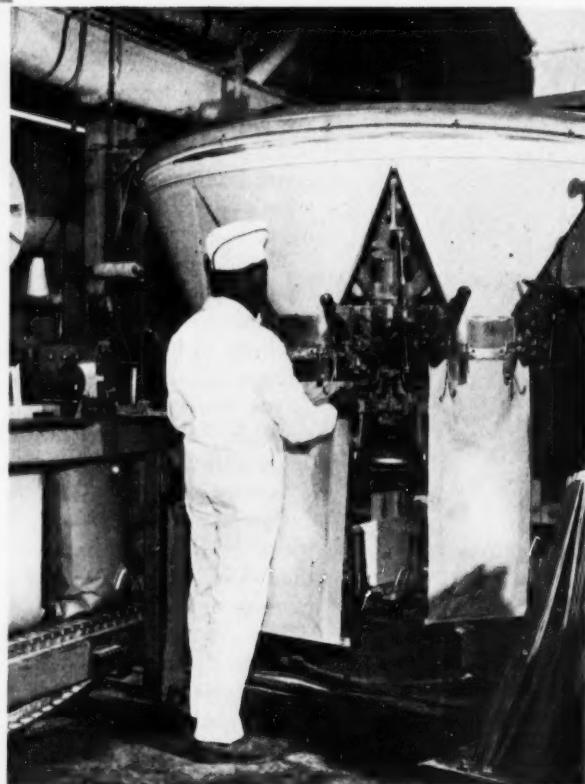
HANDLING OF BULK MATERIALS presents unique problems to the material handling engineer. Situations like the one at right make necessary an understanding of how bulk products act while being conveyed from manufacturing or processing area to packaging area, and through hoppers and filling mechanism into bags. Efficiency in handling of filled containers through closure operation and to warehouse or shipping area also involves "more than skin deep" aspects of packaging.

FOR HIGHEST EFFICIENCY . . .

Packaging

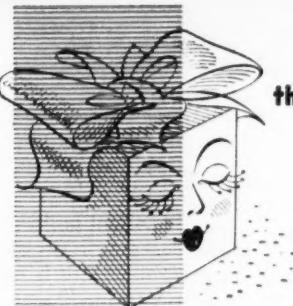
ANY package, regardless of how simple it might look, is in reality a complex unit, "under the skin." In its final form, it represents considerably more than the efforts of those who have provided a customer-attracting appearance for the product it encloses.

Within a package are reflected the results of all activities which an organization has aimed toward maintenance of high product quality and reduction of costs. This includes a reflection of results of all improvements in handling throughout the plant, right



Packaging is more

than skin deep Aspect I



Requires Handling Know-How

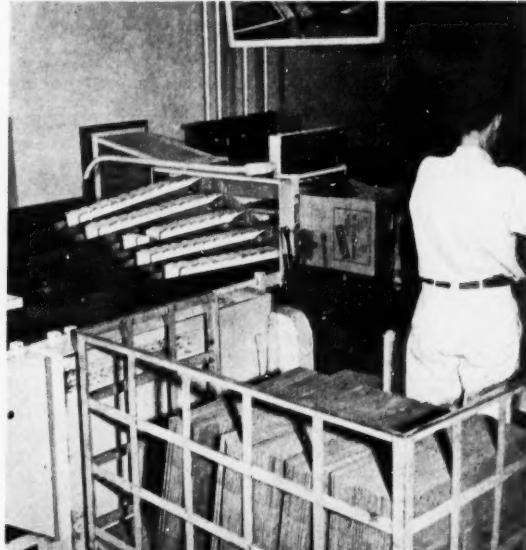
into the container; and of results of all planning for expected future handlings . . . into and out of storage places . . . through shipping and receiving activities . . . all the way to the customer.

This article focuses attention on the importance of planning carefully the specific handling operations which transfer products into containers from conveyors, pallets, racks, pallet trucks, or whatever means is used for handling up to this point.

The importance of this handling operation is quickly obvious when one considers the effect it can have on the rest of a production facility. No matter how simple, a

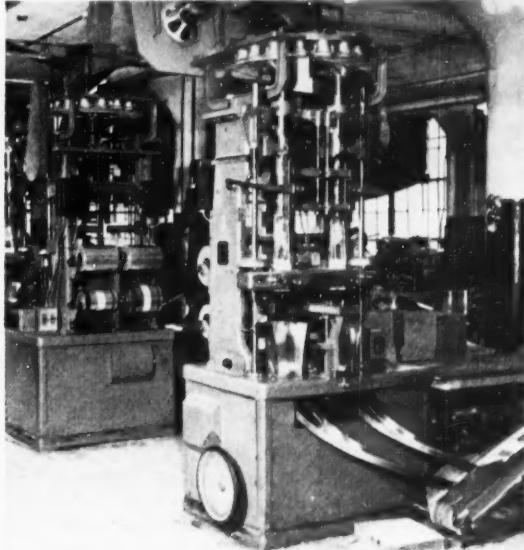
container filling operation must be accomplished with equipment which is accurately geared to other handling methods. It is here that the flows of all materials related to a single item finally come together. A filling operation which is too slow might cause production slow-downs or make necessary the use of valuable floor space near the packaging area for storage of finished products awaiting packaging.

On the other hand, when container filling is accomplished with equipment which handles products at speeds faster than can be met by production facilities, an uneconomical situation, where equipment and



THESE ARE HANDLING OPERATIONS TOO . . .

SPEED OF HANDLING into, through and away from packaging operations requires coordinated flow of product, containers and filled packages. At Anheuser-Bush plant in St. Louis, platform trucks, conveyors and chutes have been integrated into an efficient handling system. After being filled, boxes containing 50 one-pound packages of yeast are conveyed through closing and weighing operations to the shipping department.



AUTOMATIC PACKAGING MACHINES have two distinct functions: (1) They produce attractive packages with high sales appeal; (2) They get products into containers as efficiently as possible. The second function is the same as that of the hoist and operator on opposite page. Here, with handling equipment combined into single units, product is transferred into packages at relatively high speeds and at low cost.

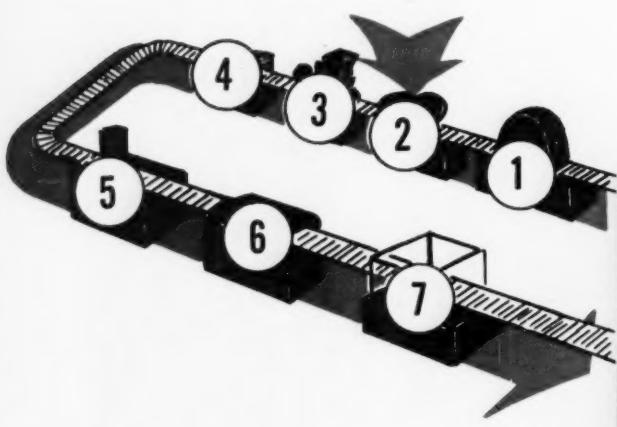
operators stand idle, might result.

The matter of accuracy in gearing the mechanics of packaging to other handlings becomes especially critical in high speed, complex packaging operations, such as those in plants where toiletries, pharmaceuticals, powdered products, pills, etc. are manufactured. Engineering of such packaging lines is complicated by the necessity of maintaining a constant, coordinated flow of materials like bottles, caps, labels, cartons, wrapping papers; all in addition to the basic task of placing correct amounts of the manufactured product (measured by weight, count, etc.) into every container. The method of handling packages away from the packaging line is also a vital factor in the degree of efficiency which can be maintained.

In the selection of equipment which will do the actual packaging, one should take into consideration such factors as labor costs, material costs, building costs, space availability and package design in addition to speeds of other operations.

An important problem in planning packaging operations concerns a decision as to whether high speed or great flexibility is most desirable. In a plant with large continuous flow of a single style of unit, speed can be the main consideration in cost reduction. On the other hand, in plants where many different types of products must be packaged, possibly at varying rates of flow from production lines, flexibility is obviously the most desirable feature. With flexibility, however, some speed generally is sacrificed. Packaging machinery manufacturers are continually doing development work along these lines, and it is often possible to adapt equipment to specific jobs where the need for flexibility has, until now, made it appear necessary to continue manual packaging operations. Such equipment combines the advantages of high-speed packaging with virtually as much flexibility as is usually associated with manual handling.

At the Engine and Foundry Division of the Ford Motor Co., Dearborn, Michigan, an efficient packaging operation has been developed with the aid of a lift truck. The truck has a derrick attachment which permits it to pick up engines at the end of assembly, transport them to the packaging department and lower them onto skid-type bases of wirebound crates which Ford uses as shipping containers.



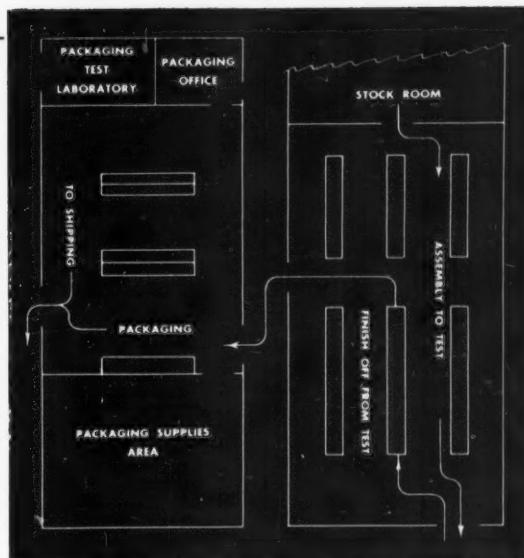
COORDINATION OF GREAT NUMBER OF HANDLINGS has resulted in highly efficient liquid packaging line illustrated in sketch, above, and photo, right. Pallet loads of empty bottles arrive at beginning of line on fork truck. Bottles are put on conveyor which carries them through opening in wall to bottle cleaner (1). Arrow over filler machine (2) indicates flow of liquid from mixing room on floor above. Special platform trucks supply necessary packaging materials to machines which include: capper (3); labeler (4); cartoner (5); wrapper (6); case-sealing machine (7). At end of U-shaped line, back on starting side of wall, a fork truck which has just brought up load of empty bottles will transport palletized cases of packaged product to warehouse.



Continued

The 786-pound engine rests upon and "floats" from two heavy timbers nailed to the base proper. One end of the engine is firmly secured to the crate base by means of two pre-placed protruding bolts. The other end rests upon the other timber, which is pre-cut to form a snug cradle. Pre-fabricated special wooden interior packing pieces further secure the engine inside the crate. Once the engine is attached to the crate base, the rest of the packaging procedure is fast and easy. The specially engineered wirebound wrap-around "mat" that comprises the four sides of the crate, one of them with specially attached wooden members to engage the interior packing bolted to one end of the engine, is then folded into shape and placed around the engine and crate base so its bottom and end cleats snugly engage the latter. The mat is closed with wire-loop fasteners and secured to the base.

The lift truck, the special wirebound containers and the method of packaging they have made possible, has permitted Ford to reduce packaging time 63% and to realize over-all packaging savings of 35%.



PHYSICAL LAYOUT OF PACKAGING DEPARTMENT is closely related to efficiency of packaging operations. This is proposed layout for Accessories Division Packaging Department of Thompson Products, Inc. Arrows show general flow of product into and away from packaging area. (See text.)

Packaging Department Layout

The physical layout of a department is closely related to the department's efficiency. One which is crowded, which does not have room for the orderly storage of its supplies, and which has no logical direction in which its work should flow, can seldom produce at top efficiency.

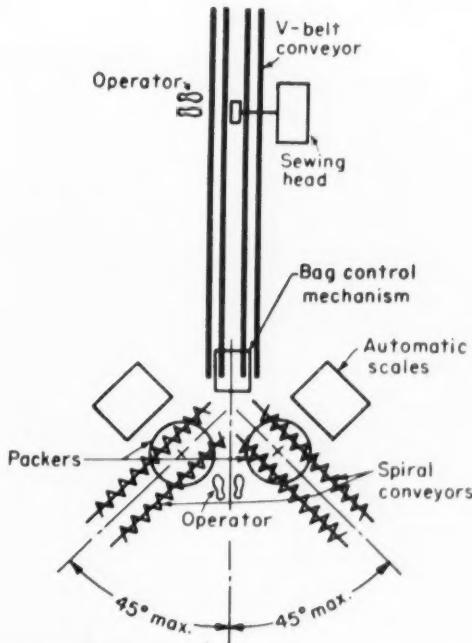
It was with this in mind that engineers of the Accessories Division of Thompson Products, Inc. started considering new packaging department layouts. Shown with this article is a sketch of a proposed new layout . . . one which has been approved by engineering as well as operating personnel.

All material which enters the packaging department prior to shipment comes either from the assembly department or the stockroom. These two are adjacent to each other to permit easy flow of stock to the Assembly department for building into the various aircraft fuel pumps and other accessories which are the major product of this division. The packaging department is directly across an aisle from the assembly department.

Shipping is from another department which is located some distance from packaging because it handles the shipments of several Tapco Plant's operating divisions. It is located on the side of the packaging department away from the assembly and stock.

The physical relationships of these departments are reflected in the new layout for packaging. For example, fuel booster pumps are the highest volume product. These are issued to assembly from the stockroom as

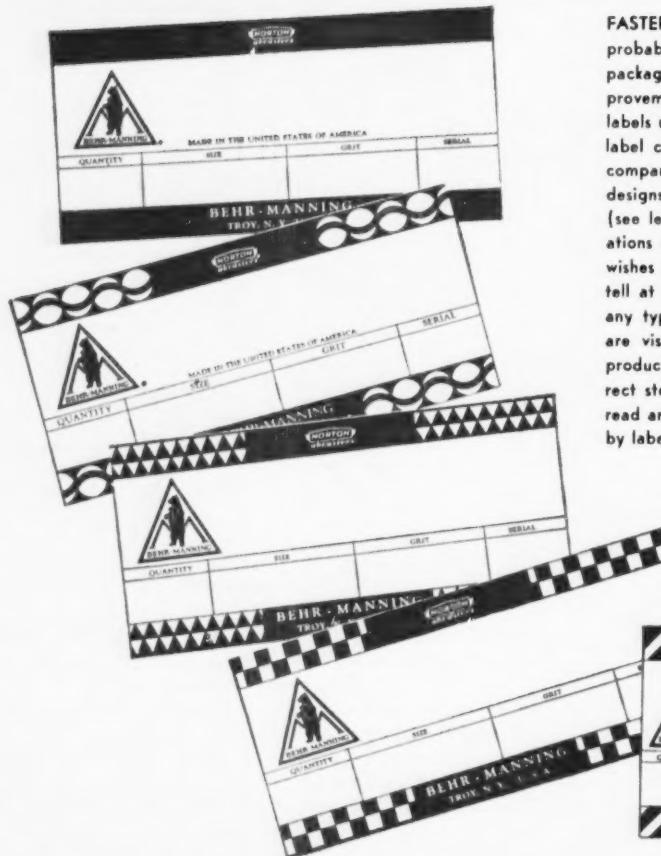
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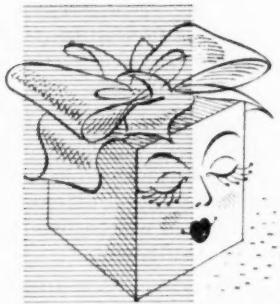
Y-SHAPED CONVEYOR SYSTEM, consisting of two 3-ft. spiral conveyors forming arms of the "Y" and 7-ft., 3-in. V-belt sewing conveyor, results in almost twice as much output in filling and closing bags. A single operator, stationed at junction of "Y", can control the weighing and filling operations of two separate packers. A more constant flow to sewing head results, increasing efficiency of bag-closing also.



packaging is more than skin deep



FASTER HANDLING, in and out of the warehouse was probably the most important benefit derived from a packaging improvement at Behr-Manning Corp. The improvement started with a decision to standardize on labels used on all the company's packages. Eight standard label colors have been established, one for each of the company's basic lines of products. Five different label designs, all within the limits of the single basic standard, (see left and below) are used to designate specific variations of each of the company's products. Thus one who wishes to move material into or out of the warehouse can tell at a glance, from any point in the warehouse, where any type of product is located. (Brightly colored labels are visible for great distances). Since colors (types of products) are not mixed, one need only move to the correct storage area and long before he is close enough to read any labels, he can identify specific abrasive materials by label design. Handling is now simpler and much faster.



..... Aspect II

Aspect I illustrated that Packaging requires handling know-how. Conversely . . .

Proper Packaging is a Factor in Efficient Handling

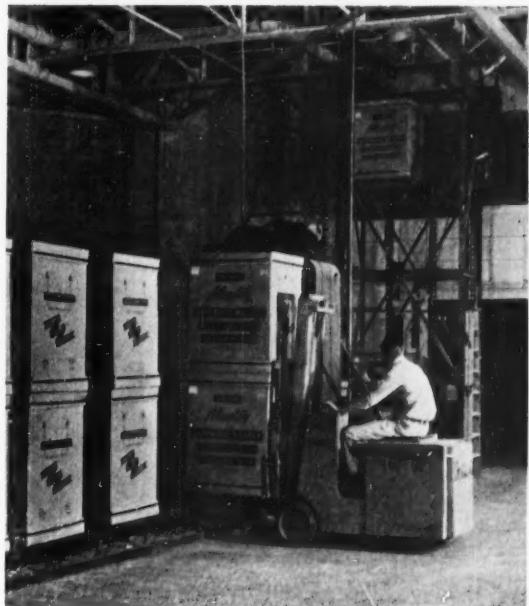
UNDER its attractive exterior, a good package will have qualities which permit it to be handled easily, quickly and at lowest possible cost. Such qualities don't just happen. They must be engineered into the package by someone who is completely familiar with material handling problems. He might be a packaging engineer working in close cooperation with the material handling engineer or he might be an engineer primarily responsible for material handling, with

Often "under the skin" package engineering, aimed at handling efficiency, will reveal the necessity for changes in the outer appearance too. A good example of that is at Behr-Manning Corp. where the manager of packaging development, Mr. Colin Ross, is fully cognizant of the aid which packaging can contribute toward efficiency in handling.

It started with a decision by manufacturers of abrasive papers to replace age-old packaging methods with standardized ones which would benefit manufacturers, distributors, retailers and users. At Behr-Manning, it reached a point of re-design and standardization of all labels used on packaged products. As a result, the company is now reaping benefits in the form of handling efficiencies, order filling speeds, and distribution savings never before thought possible.

As worked out by Behr-Manning, after several years of study and research into the handling, selling and buying habits of everyone who would ever be expected to have any contact with Behr-Manning coated abrasive products, packaging was improved in the following ways:

(More on next page)



HIGHER FORK TRUCK EFFICIENCY resulted at Maytag Co. through the use of these corrugated containers for packaging of automatic washers. Pick-up fingers replaced standard forks on the trucks. Now, a package is lifted by fingers which fit under the top flap. Two machines can be handled at one time. Faster pick-up speed with increased capacity added up to a 66% reduction in handling time.



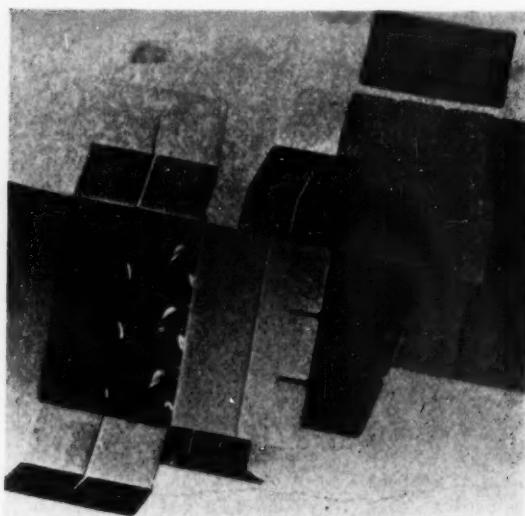
FASTER HANDLING . . .

Wirebound crates, used by A. O. Smith Co. made possible the development of a spring-loaded finger attachment for fork trucks. Here's how it works: When vertical back-rest is pushed against crate, fingers which meet wooden slats are pushed back. The remainder of the fingers fit between slats and thus are not pushed back. When mast is raised, fingers between slats engage underside of horizontal cleat which was built into the crate. Lifting, transporting and stacking are all accomplished with no lost motion by fork truck.

Packaging is a Factor

1. Standard Master (Shipping) Packages were designed. Factors taken into consideration here included; maximum weight which could be lifted safely by one person, the effects of different sizes and shapes on stacking and palletization, quantities most ordered by distributors.
2. Resale Packages, which are components of the master package, were designed. Here, of course, the main considerations were customer buying habits, sales appeal of individual packages, etc. Handling was involved to the extent that resale packages had to be of sizes and shapes which would fit into the standard shipping containers.
3. Identification of all products by use of relatively few colors, each representing a type of material, and by use of standardized variations in package appearance. Again, a two-viewed approach was used in package design. Appearance and sales appeal were given full consideration. Material handling, in Behr-Manning's plant and in its distributors' warehouses, was given equal consideration in this phase of the company's standardization program.

The important effects on material handling of the last of the three packaging improvements listed above make it worthy of detailed study. . . .



HANDLING MORE AT A TIME . . .

A unitized method of packaging and palletizing insulators has resulted in better handling before and during handling operations at Locke Department of General Electric Co., Baltimore. Basic unit in the new packaging method is a one-piece corrugated paper container (above) which holds 12 insulators.

in Efficient Handling

Continued

The key to the new method for identification of Behr-Manning's coated abrasives is a label which measures $3\frac{3}{8}$ " x $7\frac{1}{8}$ " in its largest size, (for shipping containers). For smaller containers, labels which are equal fractions of the large ones have been designed. (This permits use of a single size printing plate on offset presses used by Behr-Manning to imprint quantities and other specific data on its labels).

Each of the company's general lines of coated abrasives is identified by a specific color label, as follows:

1. Woodworking abrasives
(Abrasive material is aluminum Oxide) ...Green
2. Metalworking abrasives
(Abrasive material is aluminum Oxide) ...Brown
3. Garnet AbrasivesRed
4. Silicon Carbide AbrasivesBlue
5. Floor Sanding AbrasivesPurple
6. Flint PapersOrange
7. Emery ClothBlack

Half-inch thick strips across the tops and bottoms of all labels provide further identification as to varia-

(Continued on page 143)



LESS COSTLY HANDLING . . . Here's how Ditto, Inc., was able to reduce handling costs during shipment for Ditto "Mastersets" which it exports. Biggest saving resulted from an 80% reduction in tare weight. To keep package light, yet provide adequate protection, material is first packaged in corrugated boxes. Then, boxes are placed in waterproof bags. Two bag-protected boxes fit into a wirebound box which is closed by twisting of wire loops. For additional support and protection against pilferage, wirebounds are steel strapped. The total tare weight is only eight pounds.

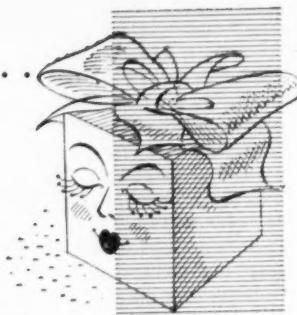


Easy palletization for better handling in the warehouse and for vehicle loading and unloading was an important result of Locke's new method of packaging. Shipping containers can now be stacked into a neat interlocked load which can be handled safely and which needs no additional support.

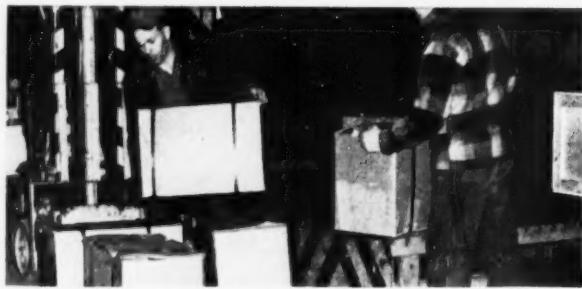


packaging is more than skin deep

. Aspect III



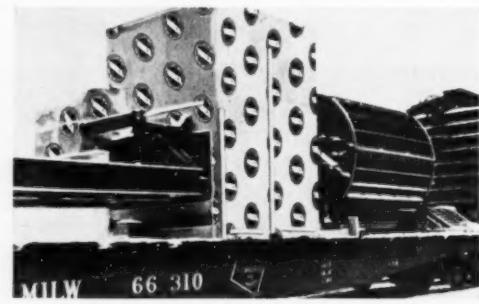
**ONE PACKAGE
MAY EXPERIENCE
MANY HANDLINGS
LIKE THESE**



I. FROM PACKAGING LINE to storage in manufacturer's warehouse, storage on dock, or directly to shipping vehicles.



2. INTO VEHICLE, which may be a box car, flat car, truck, trailer, even boats or aircraft.



3. TO CUSTOMER on shipping vehicle. In-transit damage can be your responsibility.



4. OUT OF VEHICLE, onto the receiver's dock or into his plant.



5. INTO STORAGE by another processor or wholesaler.



6. FROM STORAGE to further processing or to retail point.

important **Packaging..... to safe handling**

WHEREVER packaged products are handled, the level of efficiency of the method of handling is affected by the ability of the packages themselves to withstand unfavorable conditions which might arise during handling. The greater this ability for self-protection, the greater the possibilities for higher speeds of operation, lower costs, and greater capacities.

It is important to keep in mind, however, that there is a "point of diminishing returns," in protective packaging, where the cost of protection becomes greater than the savings which will result. Only through co-ordinated efforts, with equal consideration of handling costs, handling problems to be expected, and product protection required, can the danger of going beyond the "point of diminishing returns" be minimized.

Protective packaging, when planned with an eye toward the many handlings which will be experienced before a product reaches the final user, will do its job in three basic ways:

1. It will cushion, brace and otherwise dampen the effects of impacts, vibrations, rapid accelerations, etc.
2. It will ward off excess moisture, salt laden air, damaging gases (carbon monoxide, etc.), and other unfavorable conditions which might cause deterioration or contamination of certain types of products.
3. It protects against product loss which might result from sifting (in the case of powders), leaking (where liquids are concerned) and pilferage.

Cushion, Brace, Dampen

To insure correct protection from impacts, vibrations, etc., it is necessary that studies be made of:

the product's ability to withstand rough treatment, characteristics of packaging materials which are available and conditions which are likely to be encountered in handling and storage.

Drop and vibration tests have been used to great advantage in determining product strength. They reveal weak spots and help the packaging engineer know the specific areas requiring the most protection. Occasionally, such tests reveal product weaknesses which cannot be overcome economically through packaging. Then, product redesign might provide the best answer.

With relatively inexpensive items, damage-producing tests (drop, vibration, etc.) are often used. Where high-cost products are involved, consultation with the product design engineer usually brings out necessary strength data, eliminating the need for product testing.

The great variety of cushioning, bracing and impact dampening materials which are available makes imperative a clear understanding of the reactions and changes in protective qualities of each under different handling situations. Cushioning materials include excelsior, cotton batting, rubberized hair, cellulose wadding, shredded paper, sponge rubber, wood felt, hair felt and corrugated paper. In addition, there are a number of products which are combinations of more than one of the materials just mentioned.

One of the difficulties in selecting cushioning stems from the widely different effects on a package of sudden impact as compared to vibration. Impacts, (such as those which occur when a package falls from a pallet load being moved about, from rough handling with hand trucks etc., by dock personnel, from humping

(More on next page)

Protective Packaging



RUST PREVENTION is vitally important to protect ferrous metal products from expected, and not expected, contact with excessive moisture conditions. These may vary from high humidities and rain to disasters like floods and ship sinkings. Above photo shows crated roller shafts being removed, in perfect condition, after long submersion under 20 feet of water.



IMPACT DAMAGE PREVENTION is provided by these crates for ditching machine and digging wheel. Units are anchored to base to prevent shifting. Open construction of crate permits visual check of conditions inside the package at all times while en route.

of freight cars) are usually best protected against by use of thick pads of relatively soft packaging material to absorb sudden build-ups of energy (shocks) before they reach the enclosed product. Cushioning chosen for impact protection must also be able to regain a high percentage of its original thickness after each impact, to be prepared for subsequent bumps.

It is known, however, that vibrations (such as those set up by wheels of railway cars striking rail joints) when at the same frequency as the natural frequency of the vibration isolation mechanism of the vehicle (spring nests of a car) lead to severe resonance conditions. The same holds true if vibrations pass through cushioning of a package to the enclosed product. If vibration frequencies are the same as natural frequencies of products, the resulting resonance can cause severe damage. Thus, when natural frequency of a product is low, relatively stiff cushioning protects against outside vibrations, but, the stiffer cushioning is less efficient as a shock absorber, increasing danger of impact damage. Only through intense investigation of the conditions a package will experience during its many handlings . . . and careful application of avail-



VIBRATION DAMAGE, in transit, was once a serious problem with plywood strips being packaged here. Use of corrugated paper wrap and steel strapping now keeps bundles tight where previously, loosening of unprotected bundles led to damage at ends of strips.

Continued

able packaging material . . . can an intelligent attack be made on the problems of shock, and vibration.

Preventing Deterioration and Contamination

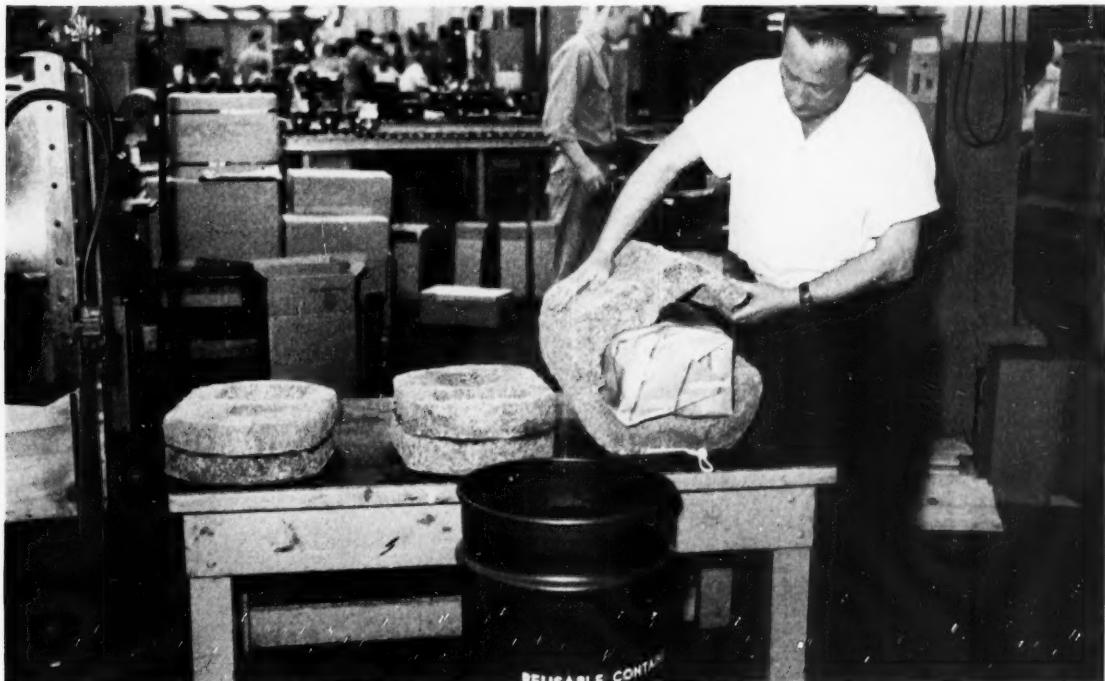
During and since World War II, much has been accomplished in the fight to prevent deterioration of metal products, contamination of necessarily pure materials (food, chemicals, etc.) and damaging absorption of moisture by hygroscopic materials. It is, by no means, a problem peculiar only to overseas, or even long-distance movement of materials. Products on shipping docks, in warehouses, or in vehicles, are all likely victims of unfavorable atmospheric conditions if they have not been properly protected. Before protective packaging can be planned, a study of the methods of handling and storage which will be employed from manufacturer to customer, the effect each condition will have on the product, and a knowledge of every type of protective material available is necessary.

For protection against any damage which might result from excess moisture or contaminating foreign

(More on next page)



IMPACT DAMAGE, which would result from shifting of packaged unit whenever shock occurred, was eliminated by coal stove manufacturer. Special brace fits into recessed area at top of stove and engages cleats which have been built into top of wirebound crate.



COMBINATION PROTECTION, against three different sources of product damage, is provided by this package. Flexible barrier, coated with volatile corrosion inhibitor, is first wrapped around unit to protect against rust. Then, rubberized hair cushioning, molded

in correct shape, is put around unit. Side pieces, combined with top and bottom, provide protection against both impact and vibration. Unit, wrapped in rubberized hair, fits tightly into drum. Desiccant is added to absorb moisture. Drum is sealed with rubber gasket.

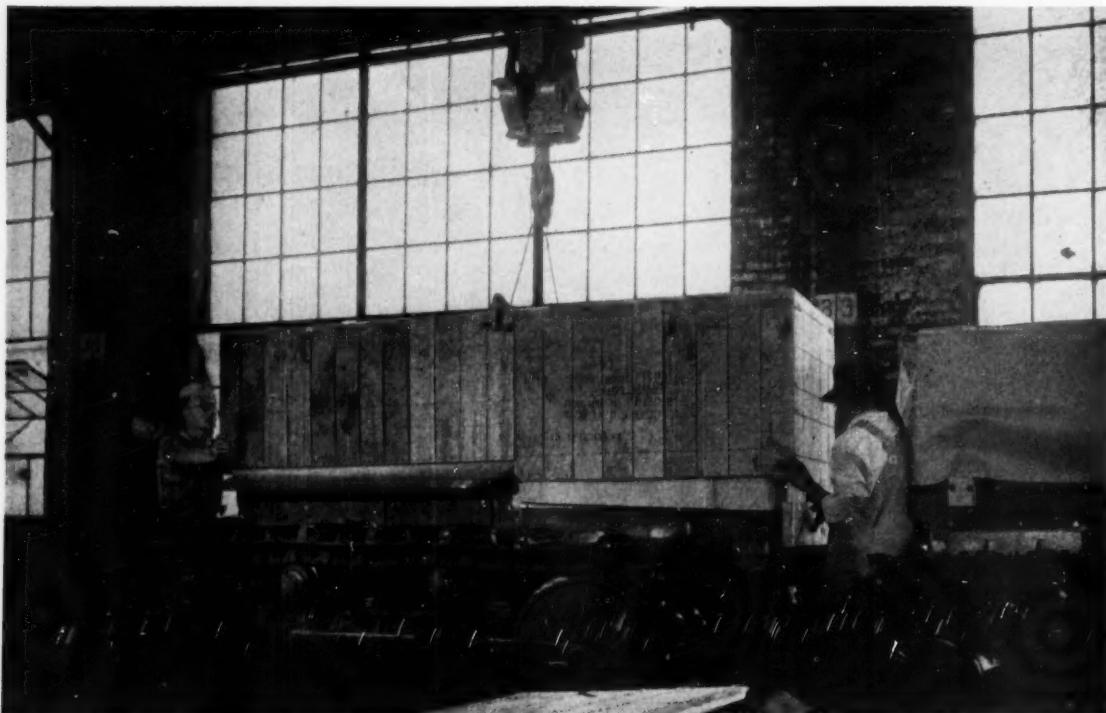
substances, the packaging engineer can find help in any of a variety of contact preservatives, flexible barriers (protective wraps etc.), strippable compounds and rigid barriers (waterproof drums, etc.). Dessicants (drying agents) can be used with most of the above where complete protection from even a minute amount of moisture is imperative.

The importance of a knowledge of the various handleings a package will experience becomes obvious when one is faced with the task of selecting a flexible barrier. Basically, there are only three types: (1) Barriers which are waterproof and protect against rain during outdoor storage and transportation, road spray in open vehicles, etc.; (2) Barriers which are moisture-vapor proof and which, when sealed tight, provide a block against the infiltration of even the slightest amounts of moisture. They are often used in conjunction with dessicants to prevent damage to precision parts which would be damaged easily through rust when in storage or in shipment; (3) Grease proof barriers are primarily used as retainers for preservative oils or grease which has been used to coat a metal part. Their use can mean much to more efficient han-

dling and storage. Slippery, coated products become relatively easily handled units when enclosed in grease-proof barriers, and personnel and other products are protected from the coatings.

Often, a high degree of product protection can be achieved through the use of special linings for almost any type of container. The linings may be in the form of separate liners (in most cases, this involves the use of any of the three basic types of flexible barriers). Linings are also available as integral parts of the inner surfaces of containers and are applied as a coating by the container manufacturers. If containers are to be used in the shipment of liquids, lining material must, of course, be waterproof. If they are to be used for protection of materials easily damaged by moisture, they must not only be waterproof, but must have, or be used in conjunction with, materials having moisture absorbing or corrosion inhibiting qualities.

Closure of protective liners, barriers, and waterproof containers must be such as to provide a tight seal even under the most unfavorable handling conditions. Heat sealing, sewing, cold pressure sealing,



LOSS DUE TO PILFERAGE was eliminated by tractor manufacturer by use of special wirebound hood. Formerly, seats, handles, etc., were stolen from a large number of the tractors which the company exported.

Flexible barrier underneath hood protects against dust, spray, etc. The hood is bolted and steel-strapped to the tractor, and now, to get to pilferable parts of tractor, it would be necessary to cut binding wires.

taping, gluing, stapling are all available for use in the tight closure of flexible barriers, liners, bags, etc. For rigid barriers, sealing rings, used with rubber gaskets often provide the most satisfactory closure. Waterproof tapes, and adhesives often can supply complete protection for products in fibre drums, waterproofed corrugated boxes and similar containers.

Protection Against Loss

Product loss is profit loss. A business might be operating at a good profit, but as long as any amount of its product is lost, for any reason, it is most likely not operating at the highest possible profit. The exception might occur where the cost of further handling or packaging improvements might be greater than the value of the product being lost. As in any other phase of packaging for handling, there is point of diminishing returns which can be determined only by someone thoroughly familiar with both handling and packaging.

Products are lost as a result of the following:

Powdered materials, when packaged improperly, may sift out whenever handling of any sort occurs. Visualize a trail of powdered material from the packaging line to the shipping dock or warehouse, into the shipping vehicle, into the customers storage area, through any other handlings which will be necessary, right up to the point of use. That trail is made up of wasted profit. Is this a serious problem? . . . A glance at al-

most any area where powdered products are stored and handled will almost always show powder everywhere, proof of just such waste . . . and illustrate the seriousness of the problem.

Liquid-loss from leaky containers or improperly protected containers which break can be combated. Container manufacturers have devoted considerable research to the design and construction of specific containers which will retain liquids under even the most unfavorable handling conditions. Containers featuring a great deal of resiliency, such as polyethylene bottles, lined fibre drums, and lined corrugated containers often come through impacts, such as drops in handling, without losing a drop.

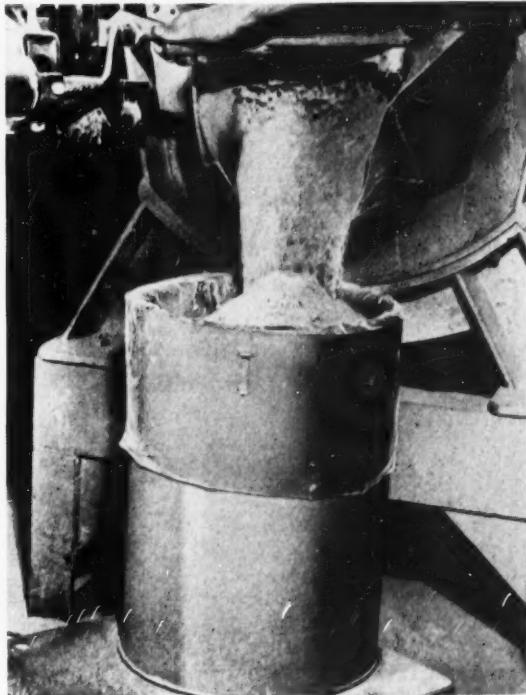
Mis-directed shipments account for about 10% of the total claims filed against common carriers. Losses of this sort are considerably more serious than those discussed till now in this article, since the entire shipment is lost, rather than just a part of it. Carriers seldom fail to make good on claims resulting from lost shipments, which, on the surface, appears to make these losses of little real seriousness as far as the shipper is concerned. Actually, they are paid for out of the pocket of the shippers of the country in the form of higher freight rates than would otherwise be necessary.

The primary solution to the costly problem of lost shipments is a simple one, and a responsibility of the packager. Care in marking, of information like ad-

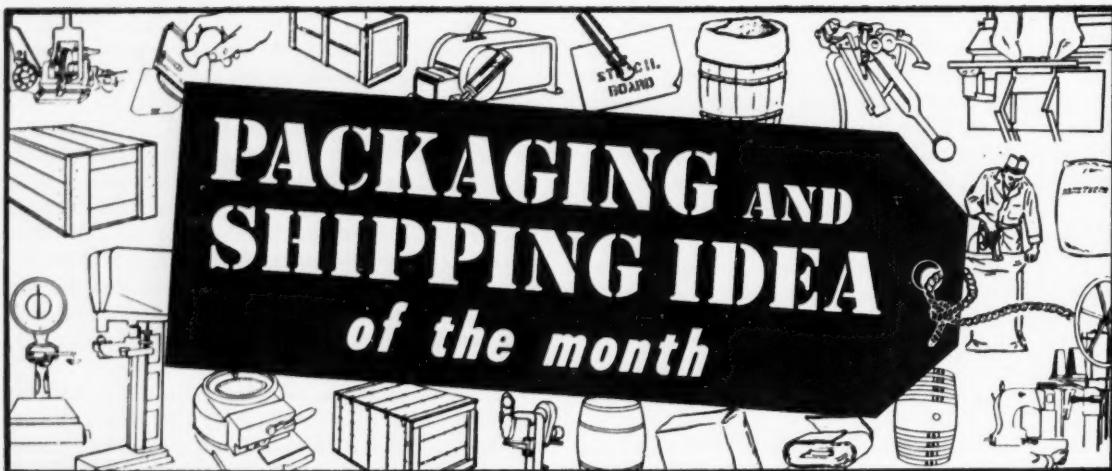
(Continued on page 154)



LOSS OF PRODUCT, due to misdirected shipments, can be guarded against by use of permanent, clear letters and numbers. For shipments going overseas, it is wise to repeat instructions in handlers' language.



LOSS THROUGH DUSTING, during all the handlings a package will experience, is one of the more serious profit-wasters. Use of dust-proof containers or dust-proof liners helps solve this handling problem.



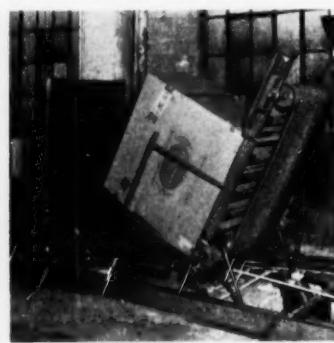
Gentle "Flip-Flop"

Pride and joy of the packaging department at Olympic Radio & Television, Inc., is a device referred to as "flip-flop". It is a device for turning radio and television sets up-side down for bottom sealing. Original cost of the equipment was \$3500. and annual savings have been set at \$24,000. Of equal importance to Olympic management is a sharp reduction in accidents and labor turnover. In addition, damage to fragile sets has been virtually eliminated, in the packaging operation.

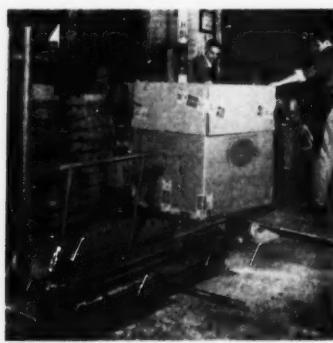
The "flip-flop" was designed to handle any size unit from the heaviest radio-television combination console to table models. It is air operated and consists of two L-shaped jigs, each of which rotates 90° along the direction of travel of the conveyor packaging line. The accompanying photos illustrate how the jigs work together to complete a 180° turnover. The entire operation is completed in only 32 seconds.



CORRUGATED CARTON with flaps folded back and taped, is placed over radio-TV combination weighing 275 lb., and pushed onto first of two L-shaped jigs. At uprights, it strikes switch to start 90° rotation.



AIR PISTONS mounted in floor pull down vertical section of "flip-flop" jig. When it completes rotation, it strikes a second switch to start next phase of "flip-flop".



INTERLOCKING FINGERS of second jig raise up to start a second 90° rotation of appliance. Switchover between jigs is smooth and gentle, preventing damage.

BELT CONVEYOR SECTION is activated as jig completes rotation and strikes air-switch. First jig returns to rest, and strikes switch which returns second jig to rest.

Management wants to know

Large corrugated carton inventories, small lot orders, frequent style and size changes, slow delivery, obsolescence, high set-up charges, and wasted storage space all add up to high costs and low profits. Your present packing material procurement, handling, and warehousing system has been made antiquated almost overnight—by a new and revolutionary packaging idea that solves *all* these costly packaging problems.

- How to increase profits
- How to cut packing and shipping costs
- How to reduce inventory
- How to save storage space and gain manufacturing space

You have the *only* answer to these, right in this advertisement

Before



Turns over
4 times per year

Only Colt Rite-Size Equipment gives you these three-way savings:

After



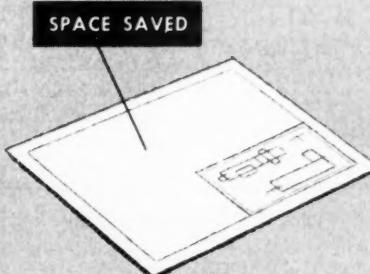
Turns over
24 times per year

1. Save on inventory.

No need to buy containers in greater-than-wanted-quantities — to stock-pile special sizes and shapes against future requirements. With Rite-Size equipment you make the right size container for each item — on the spot, whenever you want it. You reduce inventory and handling costs, eliminate loss from obsolescence, save still more by making smaller boxes from scrap.

2. Save on storage space.

Your complete Rite-Size department — including sheet stock storage — requires only 1,600 square feet of floor space — a saving of up to 90% for many plants!

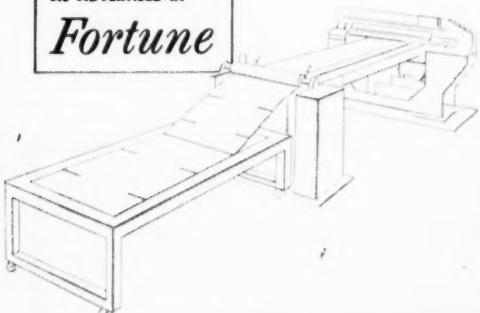


3. Save on packing and shipping costs (often as high as 15% of product cost!).

You eliminate costly set-up charges and delays in delivery. With the correct size box every time, you eliminate overpacking and waste, reduce cube in storage and transport.

AS ADVERTISED IN

Fortune



**Rite-Size
EQUIPMENT**

manufactured by



MAKERS OF FAMOUS COLT HANDGUNS,
AUTOMATIC DISHWASHING MACHINES, AND
MOLDED PLASTIC AND FIBERGLAS PRODUCTS

You can save your company *real money* (savings average more than \$16,000 per year!) by investigating Colt Rite-Size Equipment.

Mail the coupon today.

THE MOST PROFITABLE COUPON YOU'VE EVER MAILED!

COLT'S MANUFACTURING CO.

Packaging Machinery Division, Dept. FL-4,
Hartford 15, Conn.

Please send us information about Colt Rite-Size Equipment

Name Position

Company

Address

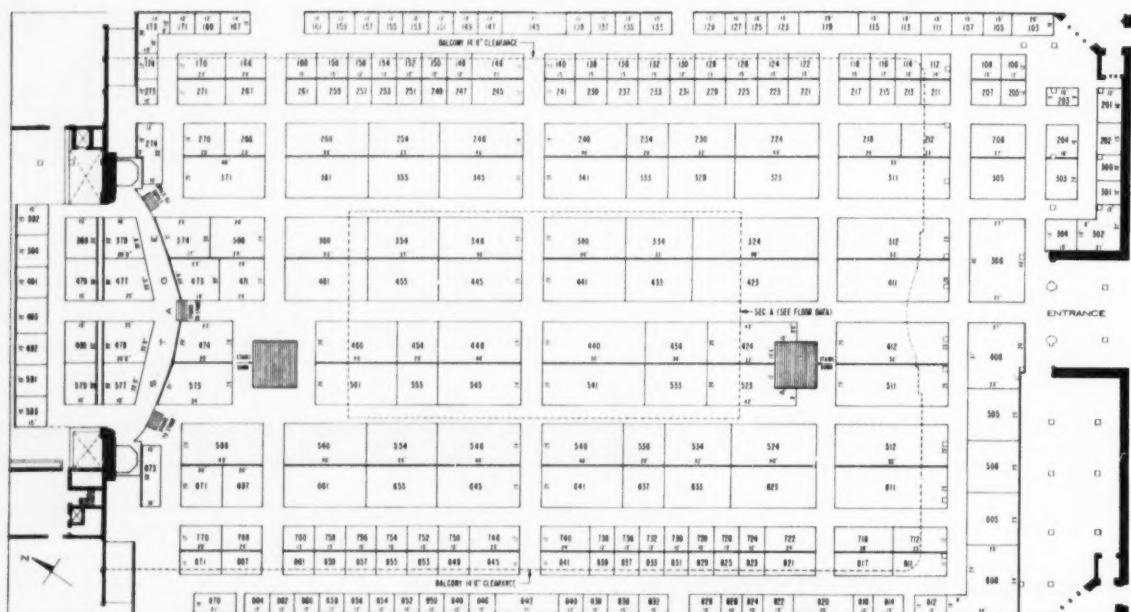
City State

Circle No. 43 on Reader Service Card for more information

PACKAGING IS MORE THAN SKIN DEEP . . .



Lower Level Floor Plan



Boardwalk Level Floor Plan

... AS EXHIBITED AT:

The National Packaging Conference and Exposition

Convention Hall,
Atlantic City
April 5-7, 1954

AT THE gigantic packaging show sponsored by the American Management Association, the largest percentage of exhibits will show answers to "more-than-skin-deep" packaging problems, as well as give helpful ideas for adding sales appeal to products you ship. In the list, below, FLOW has divided the names of companies who will exhibit at Atlantic City into three categories corresponding to the cost reducing, quality maintaining approaches the preceding three articles. The list is complete and accurate as far as possible from information gathered, from exhibitors and the show's sponsor, up to March 1.

In conjunction with the exposition, a three-day conference will provide thorough coverage of all phases of the subject. Among the subjects which will be discussed, are: A half-day presentation by representatives of Monsanto Chemical Co. on, "Packaging is a Co-ordinated Effort at Monsanto"; A series of lectures under the chairmanship of Paul O. Vogt, General Electric Co., on "Problems and Solutions in Industrial Packaging Today"; A half-day discussion by representatives of Kraft Foods Co. on "Research Pays Off at Kraft Foods".

List of Exhibitors

1. EQUIPMENT FOR HANDLING

(See page 120)

Exhibitor	Booth	Exhibitor	Booth	Exhibitor	Booth
Conveyors:					
Chain Belt Co. of Milwaukee	1226	Bartell Engineering Co.	1027	Hudson Sharp Machine Co.	306
Counsel Machine Co., Inc.	583, 581	Battle Creek Bread Wrapping Machine Co.	1105	International Paper Box Machine Co.	1134, 1140
Food Mchy & Chem. Corp.	536, 540, 541	Biner-Ellison Mchy. Co.	274	Ivers-Lee Co.	867
Island Equipment Corp.	116, 118	Brown Bag-Filling Machine Co.	260	R. A. Jones & Co., Inc.	545
Pack-Rite Machines (Div. of Techtmann Industries)	712	Cargo Packers Special Products Co.	170	Paul L. Karstrom Co.	823
Rapids-Standard Co., Inc.	302	Ralph Chaffee & Co.	301	Karl Kiefer Machine Co.	832, 836, 838
Triangle Package Mchy. Co.	722	Chase Equipment Corp.	870	Lakso Co.	814
Union Steel Products Co.	53*	Chisholm-Ryder Co. of Penna.	822, 824	Leiman Bros., Inc.	1440
Filling, Packing, Weighing and Counting Equipment:					
Amsco Packaging Mchy. Inc.	536, 540	Arthur Colton Co.	1012	Lynch Corp.	340
Anderson Bros. Mfg. Co.	1301	Consolidated Pkgng. Mchy. Corp.	266	M.R.M. Co., Inc.	204
Arenco Machine Co.	202	Elgin Mfg. Co.	253	Miller Wrapping & Sealing Machine Co.	536, 540
		Exact Weight Scale Co.	828	National Equip. Corp.	1247, 1346
		Food Mchy. & Chem. Corp. (Canning Mchy. Div.)	541	New Jersey Machine Corp.	623
		B. F. Gump Co.	155, 157	Oliver Mchy. Co.	254
		Hayssen Mfg. Co.	230	Package Mchy. Co.	311
		Hope Machine Co.	123	Pak-Rapid Inc.	159, 161

Exhibitor	Booth
Pfaudler Co.	203
Pneumatic Scale Corp. Ltd.	218
Popper & Sons, Inc.	1430, 1432
F. B. Redington Co.	305
Roto Bag Machine Corp.	811, 812, 817
Scale Specialties & Systems	1342
Scandia Mfg. Co.	511
Simplex Pkgng. Mchy., Inc.	536, 540
Specialty Automatic Mach. Co.	924, 926
Standard-Knapp Div. of Emhart Mfg. Co.	346
Stokes & Smith Co.	541
Toledo Scale Co.	1123
Transparent Wrap Machine Corp.	240
Triangle Package Mchy. Co.	722
U. S. Bottlers Mchy. Co.	262
U. S. Engineering Co.	113, 115
Veeder-Root Inc.	1445
H. G. Weber & Co., Inc.	821
Weigh Right Automatic Scale Co.	831, 829
Wrap-Ade Machine Co., Inc.	261
Wrap-King Corp.	862, 860
Wright Machinery Co.	341

Holders, Dispensers, Cutters of Packaging Materials:

Charles Beck Machine Corp. .223, 225
 Cameron Machine Co.1055
 Cargo Packers Special Prod. Co.170
 John Dusenberry Co., Inc.1109
 Paper Converting Machine Co.1234

Hoists:

Paper Converting Machine Co. 1234
Yale & Towne Mfg. Co. 1126

Industrial Trucks, Attachments and Accessories:

The Baker-Raulang Co.	1051
Eig Joe Mfg. Co.	1130
Clark Equipment Co.	1150
General Electric Co. (Apparatus Sale Div.)	1220, 1222
Goodyear Tire & Rubber Co., Inc.	446
Rapids-Standard Co., Inc.	302
Rheem Mfg. Co.	1453, 1449
Yale & Towne Mfg. Co.	1126

2. EQUIPMENT AND MATERIALS WHICH HELP INCREASE HANDLING EFFICIENCY

ENRICHMENT
(See Page 124)

Containers: (See listing under "Equipment & materials providing protection".)

Control Systems & Equipment:

Askania Regulator Co. 1230

Exhibitor	Booth
General Electric Co. (Apparatus Sales Div.)	1220, 1222
National Laboratories & Mfg. Corp.	173
Reeves Pulley Co.	167, 169
Walton Laboratories Inc.	913
Warner Electric Brake & Clutch Co.	1227

Conveyors: (See listing under "Equipment for Handling")

Industrial Trucks: (See listing under "Equipment for Handling")

Marking, Labeling, Addressing Equipment and Supplies:

Addressograph-Multigraph Corp. 1127
 Algene Marking Equip. Co. 160
 American Marking Corp. 1335, 1337
 American Type Founders 871
 Avery Adhesive Label Corp. 135, 137
 Bensing Bros. & Deeney 360
 Biner Ellison Mchy. Co. 274
 Burt Machine Co. 850, 852
 Cargo Packers Special Prod. Co. 170
 Champlain Co., Inc. 206
 Chisholm-Ryder Co. of Penna. 822, 824
 Clark-Aiken Co. 1354, 1348
 Dennison Mfg. Co. 842
 Dispens-A-Label Devices 1558
 Doughboy Industries, Inc. 667
 Economic Machinery Co. 355
 Adolph Gottscho, Inc. 224
 Gravure Cylinder Corp. 1225
 Greenwood Packaging Supply Co. 1454
 Hayssen Mfg. Co. 230
 H. H. Heinrich Co. 561
 Alfred Hoffman & Co. 1031
 Ideal Stencil Machine Co. 129
 Interchemical Corp. (Printing
 Inks) 1127

Exhibitor	Booth
Speedy Products, Inc.	1457
Sun Chemical Corp.	112, 211
Tompkins' Label Service	673
Weber Addressing Machine Co.	854
Wolverine Paper Converting Mchy. Corp.	171
Wrap-King Corp.	862, 860
York Tape Printers Inc.	1235

Unitizing Equipment and Materials:

Acme Steel Co.	146
Federal Adhesives Corp.	1239
Felins Tying Machine Co.	174
F. G. Findley Co.	1157
H. B. Fuller Co.	1008
Hampton Mfg. Co. (Ind. Tape Div.)	1042
Ideal Stencil Machine Co.	129
Paul L. Karstrom Co.	823
Le Page's, Inc.	1347
Mid-States Gummed Paper Co.	841
Minnesota Mining & Mfg. Co.	724, 726, 728
Mystik Adhesive Products	151, 153
National Adhesives Div. of National Starch Prod., Inc.	441
National Bundle Tye Co.	1216
Paisley Products Inc.	212
Seamless Rubber Co.	1434
Standard-Knapp Div. of Emhart Mfg. Co.	346
Union Paste Co.	1157

3. EQUIPMENT & MATERIALS WHICH PROVIDE PROTECTION DURING HANDLING

(See page 128)

Barrier Materials, Dessicants, Coatings, etc.

Aluminum Co. of America.....	566
Aluminum Foils, Inc.	1232
Bakelite Co.	412
Bischoff Chemical Corp.	1334
Bordon Co., Chemical Div.	1117
Celanese Corp. of America.....	445
Celluplastic Corp.	1207
Central St ^r Paper & Bag Co., Inc.	237
Chester Pkgng. Prod. Co. Inc. 925, 927	
Continental Can Co., Inc.	512, 611
Dewey & Almy Chemical Co.	1253
Diaphane Corp.	128
Dixie Wax Paper Co.	1441
Debeckmun Co.	533

Exhibitor	Booth
Dow Chemical Co.	560
E. I. du Pont de Nemours & Co. Inc., (Film Dept.)	423
E. I. du Pont de Nemours & Co. Inc. (Kinetic Chemical Dept. & Polymers Dept.)	324
Durethane Corp.	1223
Eagle Chemical Co., Inc.	1212
Eastman Chemical Products, Inc.	554
Eastman Kodak Co.	546
Eko Products Co. (Eko Foil Div.)	912
Envelope Mfrs. Assn. of Amer.	107
Fulton Bag & Cotton Mills	147
The Glassine & Greaseproof Mfg. Assn.	132, 136, 138, 140
B. F. Goodrich Chemical Co.	1035, 1041
Hobbs Mfg. Co.	1147
Kalamazoo Vegetable & Parchment Co.	471
Lederle Laboratories Div., American Cyanamid Co.	1353
Marathon Corp.	505
McLaurin-Jones Co.	1442
Mehl Mfg. Co.	1240
Melrose Packaging	1241
Monsanto Chemical Co.	312
Olin Cellophane Div., Ecusta Paper Corp.	1120
Oneida Paper Products, Inc.	1153
Plax Corp.	354
Poly-Seal Corp.	1131
Reynolds Metals Co.	440
Riegel Paper Corp.	406
Shellmar Products Corp.	512, 611
Shelton Mfg. Co., Inc.	905
Sherman Paper Products Corp.	555
H. P. Smith Paper Co.	105
Sylvania Div., American Viscose Corp.	411
James Thompson & Co., Inc.	1332
Union Bag & Paper Corp.	345
Visking Corp.	523

Closing & Sealing Equipment & Supplies:

A.B.C. Pkgg. Machine Corp.	723, 736
Acme Steel Co.	146
Amsco Pkgg. Mchy., Inc.	536, 540
Arenco Machine Co.	202
Atlas Plywood Corp.	1122
Bartelt Engineering Co.	1027
Better Packages, Inc.	234
Bostitch, Inc.	655
Celon Co.	825
Chisholm-Ryder Co. of Penna.	822, 824
Consolidated Pkgg. Mchy. Corp.	266
Container Equip. Corp.	119
Crown Cork & Seal Co.	270, 371
Derby Sealers, Inc.	106, 108



Shipper Hits Savings Jackpot with new Unitizing Method!

A Signode unitizing method that can work for you!

Shipping textile machine parts always was costly for one manufacturer until he called in a Signode fieldman. A new strapped Unit-Pack was designed and tested—and the manufacturer soon realized that he had hit the jackpot in savings! He saved

74.2% in labor

74.0% in overhead

57.7% in materials

55.2% in container cost

26.0% in freight

Here's the story: The manufacturer was shipping two cylinders for spinning or twisting frames in a heavy wooden crate. Becoming conscious of shipping costs, he sought a way to reduce this expense. The Signode fieldman offered the solution—a double carton secured with tensional steel strapping.

Unitizing your shipments with steel strapping may turn expense into profits—damaged goods to safely delivered goods. It costs you nothing to find out what can be done. Send for our folder showing **6 BASIC WAYS OF UNITIZING!**



2618 N. Western Ave., Chicago 47, Ill.

In Canada: Canadian Steel Strapping Co. Ltd., Montreal • Toronto
Offices coast to coast—Foreign Subsidiaries and Distributors World-Wide
Circle No. 122 on Reader Service Card for more information

Exhibitor	Booth	Exhibitor	Booth	Exhibitor	Booth
Diagraph-Bradley Industries, Inc.	718	Containers (in-plant & shipping), and Container-making Equipment:		Tri-State Plastic Molding Co.	1107
Eastern Duo-Fast Corp.	1249	American Can Co.	461	Union Bag & Paper Corp.	345
Federal Adhesives Corp.	1239	American Rondo Corp.	1340	Union Steel Products Co.	534
J. L. Ferguson Co.	205, 207	Ames Bag Co.	1523	United Can Co., Inc.	1246, 1248
F. G. Findley Co.	1157	Arvey Corp.	122, 124	U. S. Automatic Box Mchy. Co., Inc.	329
Dave Fischbein Co.	826	Associated Coperage Industries of America, Inc.	247		
Food Mchy. Chemical Corp.	535, 540, 541	Atlas Plywood Corp.	1122		
H. B. Fuller Co.	1008	Bakelite Co.	412		
Globe Heat-Seal Inc.	241	Bemis Bro. Bag Co.	303		
Ferdinand Gutmann & Co.	114	Bradley Container Corp.	909		
Hamer Machine Co.	959	F. N. Burt Co., Inc.	845		
Hampton Mfg. Co. (Ind. Tape Div.)	1042	Celluplastic Corp.	1207		
Hayssen Mfg. Co.	230	Central States Paper & Bag Co., Inc.	237		
Hilker Prod. Corp.	1013	Chase Bag Co.	478		
Alfred Hofmann & Co.	1031	Cleveland Container Co.	333		
Ideal Stencil Machine Co.	129	Continental Can Co., Inc.	512, 611		
International Paper Co.	1135, 1137, 1141, 1145	S. Curtis & Son, Inc.	904		
International Staple & Machine Co.	820	Daher Co. (Holland Box Div.)	1322		
Le Page's Inc.	1347	Dennison Mfg. Co.	842		
Manhattan Paste & Glue Co., Inc.	760	Fibre Drum Mfrs. Assn.	139		
Marsh Stencil Machine Co.	221	Fulton Bag & Cotton Mills	147		
Mercury Heat Sealing Equip. Co.	1209	Robert Gair Co., Inc.	506, 605, 806		
Mid States Gummed Paper Co.	841	Gaylord Container Corp.	573		
Minnesota Mining & Mfg. Co.	724, 726, 728	General Box Co.	746		
Mystik Adhesive Products	151, 153	B. F. Goodrich Chemical Co.	1035, 1041		
Nashua Corp.	229, 231, 233	Gordon Cartons, Inc.	833		
National Adhesives Div. of National Starch Prod. Inc.	441	Hankins Container Co.	857, 855		
National Bundle Tye Co.	1216	Harcord Mfg. Co.	1218B		
National Equip. Corp.	1247, 1346	Hazel-Atlas Glass Co.	661		
National Metal Edge Box Co.	454	Hinde & Dauch Paper Co.	433		
Owens-Illinois Glass Co.	323	Hol-Bag Inc.	811, 812, 817		
Pack-Rite Machines Div. of Techmann Industries	712	Imco Container Corp.	1426		
Paisley Products Inc.	212	International Paper Co.	1135, 1137, 1141, 1145		
Penn Tape Savers	1345	Jiffy Mfg. Co.	242		
Permacel Tape Corp.	473	Kingsbury & Davis Machine Co.	541		
Peters Mchy. Co.	738, 740	Massachusetts Plastic Corp.	960		
Poly-Seal Corp.	1131	National Can Co.	577		
Popper & Sons, Inc.	1430, 1432	National Container Corp.	374		
Potdevin Machine Co.	366	National Paper Box Mfrs. Assn.	637		
Resina Automatic Mchy. Co., Inc.	579	National Wooden Box Mfrs. Assn.	766		
Seal-Spout Corp.	201	Owens-Illinois Glass Co.	323		
Seamless Rubber Co.	1434	Plax Corp.	354		
E. G. Staude Mfg. Co., Inc.	156, 158	Post Machinery Co.	968, 938, 939, 1038		
Stein Hall & Co., Inc.	145	Rheem Mfg. Co.	1453, 1449		
Swift & Co. (General Adhesives Products Dept.)	846, 848	Shelton Mfg. Co., Inc.	905		
Triangle Package Mchy. Co.	722	Sherman Paper Products Corp.	555		
Union Paste Co.	1157	Stone Container Corp.	483		
Vac-Tie Fasteners, Inc.	154	Sutherland Paper Co.	361		
Vertrod Corp.	840				

**SYSTEMIZED
WAREHOUSING . . .**
(Continued from page 77)

prepared on machines in the warehouse offices.

Use of the oblique stacking technique in the warehouse makes it possible to use conventional, 4000-pound fork trucks in aisles not much wider than six feet. In the center of the selection area, where the mezzanine does not restrict stack heights, some of the fast-moving merchandise is stacked practically to the rafters—sometimes five or six pallet loads high. This practice makes constant moving in of reserve merchandise unnecessary.

Fresh and frozen produce and dairy products are stored in cold-rooms at one end of the warehouse building and, whenever possible, these items are palletized or crated so they can be handled by fork truck.

Shipping

After making his rounds of the selection area, the order picker detaches his order cart from the tow line, places it near the shipping dock and gives his invoice—which has been checked to indicate completion of the order—to the shipping office.

When the shipping clerk is given a completed invoice, he codes it to show the order's destination. This code tells the loading crew where on the dock it should be spotted: all loads going in the same general area are placed at the same loading area, and are put into the same highway truck. Incidentally, the Columbia warehouse services all Colonial retail outlets in South Carolina, the southern part of North Carolina and the eastern half of Georgia. The invoice also is coded to indicate proper loading sequence in the truck, on the basis of first-on, last-off.

A well-planned combination of modern accounting procedures and modern handling techniques allows Colonial-Columbia to move and store a staggering volume of produce and groceries with an absolute minimum of error or confusion; with almost no backtracking; and with a surprisingly small labor force.

For handling multiwall bagged materials



only **MEAD CHESTNUT**

POKE-PAK can give you these advantages:

- **Freedom from maintenance.** No nails or splinters to puncture the bags—the load does not tip, because the center of gravity is low.
- **End to costly car floor lining.** By the POKE-PAK way, it is only necessary to line the ends of the car.
- **Bookkeeping cut to the bone.** No credits, charge-back and freight charges on returnable pallets.
- **Reduction in unloading and loading time** to a fraction of former time needed. It allows fullest use of limited dock facilities—does a better job faster.
- **Reduction of pallet storage space.** From 40 to 70 MEAD Chestnut POKE-PAKS will fit into the space required for one wooden pallet of the same size.
- **MEAD POKE-PAK consultant service.** Carloading diagrams, bag patterns, and samples all at no charge.
- **Adaptation to job.** Designed to fit one job only—your job. Tailor-made POKE-PAK is the perfect answer to odd size bags, for truck or rail shipments.
- **Pallet of great strength**—able to lift anything your fork truck will lift, yet so low in cost it can be thrown away after use.

MEAD Chestnut POKE-PAK is engineered to handle unit loads of bagged materials with any type fork lift truck. A sturdy rigid loading base, Chestnut POKE-PAK is manufactured from chestnut and other hardwood fibers. For complete information, write for descriptive brochure.

MEAD BOARD SALES, INC.

RIVER ROAD, LYNCHBURG 3, VA.

Sales Offices: 3347 Madison Road, Cincinnati 9, Ohio • 6124 North Milwaukee Avenue, Chicago 30, Ill. • 10 Commerce Court, Newark 2, N.J. • 18045 James Couzens Highway, Detroit 35, Mich. • 43 Leon Street, Boston 10, Mass.

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MEAD
board

CONVEYORIZED STORAGE

(Continued from page 83)

veyors are of the roller gravity type, engineered so that an operator, with practically no effort, can push a whole line of stenciled drums to live-roll conveyors leading to the filling department.

From the stenciling department, drums are conveyed to the filling department on the main floor of a third building. Drums are filled for shipment by barge, rail or truck.

These drums are spot checked for weight and carried by roller-flight conveyor direct to shipping platforms or temporary storage.

The roller-flight conveyors move drums at twice the driven speed of the conveyor. The live rolls of the conveyor, interspersed with step plates, are moved along by roller chain as they rotate about their axes. Thus, the speed of the drums is that of the chain plus the peripheral speed of the rollers. The step plates between the rollers are

a safety measure to preclude accidents should an employee step upon the conveyor in motion.

An electrically-operated deflector, actuated by an operator according to drum stencil markings, routes filled drums to storage or to one of four shipping docks.

Full-Drum Storage

The full-drum storage floor has been completely conveyorized to eliminate all manual handling of filled drums. Conveyors circumscribe the inside perimeter of the building and two additional main conveyors, perpendicular to rail and truck-loading facilities which flank the building, divide the room into three equal parts.

A total of 138 cross conveyors connect these two main lines with one another and with parallel side-wall conveyors. The cross conveyors feed into the two main conveyors and into the outer perimeter lines. Approximately 3000 drums can be stored on these 138 lines. Each line is reversible and the lines are built in reversible sections so that a vast number of independent drum routing possibilities is available and several different loading operations can be carried on at one time.

Time needed to remove a drum from storage, regardless of where it is located, is less than 90 seconds. Drums usually flow from storage at a rate of one every 10 seconds. Push-button controls located near each conveyor or conveyor section govern the direction of flow.

The conveyors adjacent and parallel to the shipping platform feed drums into freight cars or trucks by gravity sections extending into the carrier bodies. An ingenious device is used to deflect drums at conveyor transfer points. This device consists of a section of roller chain secured at each end to a rod. By inserting the rods in holes provided at conveyor corners, the chain is stretched across the conveyor to deflect drums as desired. A spring is used at one end of the chain to absorb shock. With this simple device, 10 different routing possibilities exist at each conveyor intersection.

Flow thanks Lamson Corporation for its help in preparing the preceding article.

B-LINE

TRADE MARK REG.

Portable Paper Cutter

... now you can bring Kraft Paper to the POINT OF USE!



ONE MAN OPERATION

One man can easily wheel the B-Line Portable Paper Cutter. It rolls easily on rubber-tired, oilite bearing wheels, and allows you to "bring the paper to the point of use".



OPERATED IN VERTICAL POSITION

Here's the B-Line Portable Paper Cutter Model B-72 used in a vertical position. It handles either 72 inch or 60 inch rolls (up to 12" diameters). Any length of Kraft paper can be torn off . . . cleanly, quickly, easily.



OPERATED IN HORIZONTAL POSITION

... The B-Line Portable Paper Cutter used in a horizontal position. The Model B-48 is designed for 48 inch and 36 inch rolls, up to 12" diameters. With the B-Line Portable Paper Cutter, Kraft paper can be conveniently rolled to any part of warehouse, boxcar or truck where paper is needed.

Now used nationwide by many industries, including paper, grain, flour mills, meat packing, oil refineries, mining, public and private warehouses of all types.

Manufactured and Distributed by
S. J. BINA CO. • **GRAND FORKS, N. D.**

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PACKAGING, A FACTOR IN EFFICIENT HANDLING...

(Continued from page 127)

tions of the basic types, already identified by colors. The stripes have been planned in five standard designs, each of which reveals construction details of a packaged product.

Here's how that has been established: Solid stripes on a label indicate that a package contains a coated abrasive product on which the company's standard glue has been used as the bonding medium . . . Stripes made up of small solid triangles indicate abrasives which have been constructed in a way which makes them water-proof . . . Diagonal lines identify a resin-over-glue type of construction . . . Stripes made up of small connected solid squares identify an all-resin construction . . . Open white circles running the length of stripes on a label are used on packages containing Behr-Manning's "open-coat" abrasives.

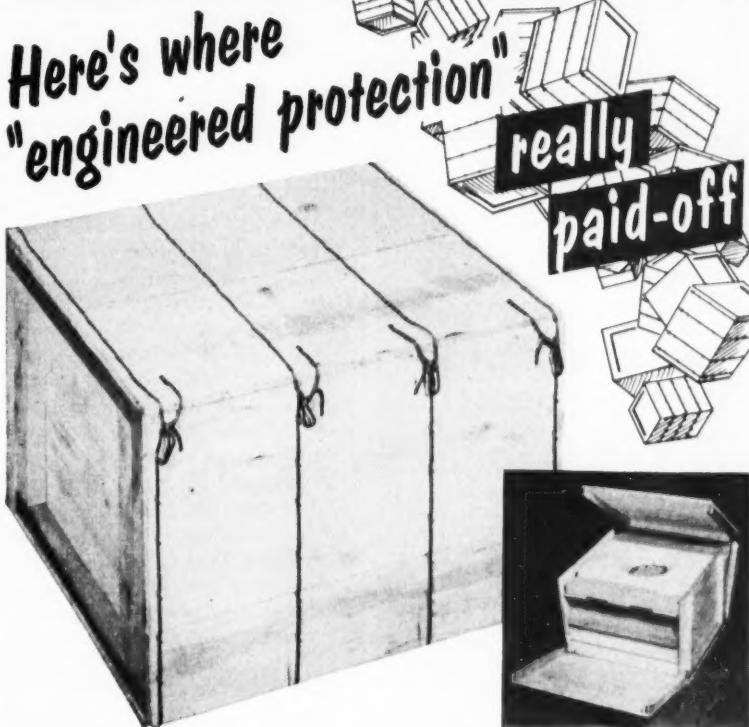
How Labels Help Handling

Benefits to handling have been greatest in Behr-Manning's own warehouse. First, considerable space savings have been made possible in the storage of pre-printed labels. In addition, and of great importance, the in and out movement of packaged merchandise has been made considerably faster.

Packaging and labeling operations at Behr-Manning are integrated parts of the over-all operations of the plant. When a production run of any coated abrasive is run, it is necessary that proper labels be on hand, ready for the insertion of specific information to suit all packages which will be made up. Previously, it was necessary to stock approximately 12,000,000 pre-printed labels in order to have enough of all types at all times. Now, after standardization, that number has been reduced to less than 1,000,000 labels.

Handling speeds in moving packaged products into and out of the finished goods warehousing area have been increased greatly by the new labels. Products with identifying colors which are alike are stored within the same general

53 YEARS OF BETTER BOXES—"THE American WAY"

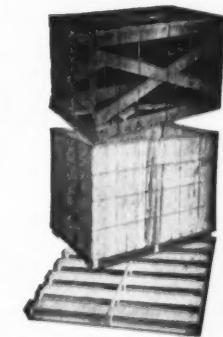


American Strength-Tested 'Wirebounds' Save Load Big Shipment Tumbles 30 Feet

Accidents will happen. This one might have demolished 32,250 lbs. of valuable merchandise. A large freight carrier overturned in transit, and 2,250 brittle refractories were thrown 25 to 30 ft. Fortunately, they were in **American Wirebound Boxes**. Casualties: only approx. 2% refractory breakage!

American "Wirebounds" are scientifically designed to "fit" your product; pack and unpack quicker, easier; save manhours. They're lighter—cut shipping weight, handle better. They're built tough to "take it" when the going gets rough. All this, at lower cost. Send your product for a "sample" packing and "quote". No obligation. Call or write.

*Thousands of acres of timber, two veneer mills, two great plants in Cleveland, Ohio, and Marion, S. C.



American Wirebound Crate,
Tote Box, Pallet



American Fibreboard Box



American Haled Wood Box

THE *American* BOX CO.

1909 W. 3rd Street Phone: SU 1-4900
Cleveland 13, Ohio

Marion,
South Carolina

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These labels were printed and marked in one operation

(at the rate of 100 per minute)

Preparing quantities of shipping or product identification labels for a multiple shipment is a costly, time-consuming operation. But not for those shippers using the Weber KC-E Label Printing and Addressing Machine.

For instance, in 30 seconds the KC-E can print 50 labels and fill in the consignee's address at the same time. It also counts the labels to give you a check on shipment quantity. It even cuts them to the exact size you want.

The KC-E prints from an inexpensive stencil that can be die-cut to reproduce your present label. Variable information is then typed in.



If you are now preparing quantities of labels with the same information, it will pay you to find out how the Weber KC-E can save you time and labor. Take advantage of the offer below.

another

Weber system

Weber Label and Marking Systems
Div.—Weber Addressing Machine Co.



Clip this to your letterhead for sample packet and folder.

Name _____

Title _____

Weber Label and Marking Systems
Dept. F-9, Mt. Prospect, Illinois

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144

PACKAGING, A FACTOR IN EFFICIENT HANDLING

Continued

areas. Thus, when one enters the warehouse, he sees banks of color which quickly identify storage areas for every type of product. Without hesitation, he can move toward the area into which he wishes to deposit material or from which he wishes to remove packages to fill orders. As he moves into that area and the stripes on each label become clear, it is simple to find the specific product desired. Quantity, width, grit and serial number are marked on each label in large, easily read characters to make final positive identification easy too.

Behr-Manning's packages are attractive. They have sales appeal which was achieved only after a great amount of planning, market surveying and work by artists. Much of the value of the packages, however, is more than skin deep. The kind of material handling savings which have been made possible are by no means restricted to manufacturers of coated abrasives. In fact, material handling engineers in almost any industry can do much to improve handling efficiencies by looking for improvements in packaging.

Unitized Packaging Aids Handling

A package improvement at Locke Department of General Electric Co., Baltimore, had a direct result on handling efficiency because it made possible the handling of more units at one time, and because it made palletization possible.

The old method used by the company for packaging of porcelain insulators involved use of a container with five separate interior packing pieces. The box only held eight insulators at a time, and due to its square shape, did not lend itself to practical palletization. When pallet loads were built-up, it was necessary to bind the entire load around its circumference to prevent toppling.

The new method makes use of a one-piece corrugated container which, with only one interior pack-

Tape-Bound Closures for Multiwall Paper Bags!



UNION SPECIAL Style 21800 H Bag Closing Machines, with 80600 H sewing heads, shown here, are heavy-duty, high production units for making low cost tape-bound closures on large multiwall paper bags.

A single foot pedal controls synchronized conveyor and sewing head. Automatic tape cutter on sewing head saves time and helps make operation smooth and easy to learn.

Sewing head and conveyor are quickly adjustable for varying bag heights and scale or platform height from floor. Entire unit is ruggedly built for dependable service in high-volume production.



Ask for a copy
of this Bulletin

It's easy to find just the right unit to meet your individual needs in Union Special's big line of bag closing machines. Ask for a copy of Bulletin No. 200, "UNION SPECIAL FILLED BAG CLOSING MACHINES".

Union Special
MACHINE COMPANY

415 N. FRANKLIN ST., CHICAGO 10, ILL.

Circle No. 131 on Reader Service Card

FLOW • APRIL, 1954

ing piece, provides 12 cells into which insulators are placed. To pack the box, bottom flaps are folded in and six insulators are placed inside the cells which they form. Then, a die-cut sheet is placed over them. Six more insulators are put in the box and the top flaps, which also form six cells, are closed and sealed with tape.

The shape of the new box lends itself well to palletization and self-unitized loads. Now, more insulators are handled and shipped at one time and product protection has been improved.

Sometimes, a good packaging idea can result in benefits which are felt all the way back into production departments. A manufacturer of attic fans, for instance, has been able to make use of the top and bottom pieces of wire-bound shipping containers as work holders during assembly. The two end pieces are attached to shells for the fans when the shells are shipped to the fan manufacturer.

For assembly operations, it is only necessary to remove the wire-bound mat in which the supplier wrapped the shell and set the unit (with top and bottom of the container still attached) onto the assembly line. After assembly, a mat is wrapped around the completed unit, still using the same two end pieces, and the unit is re-shipped, as a completed fan.

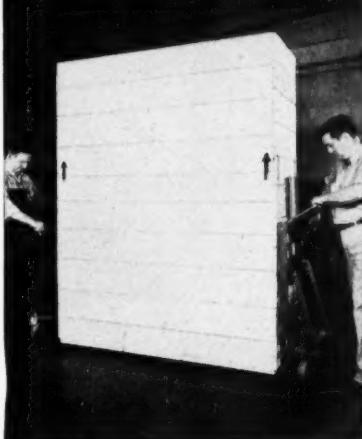
Thus, the package designer at the above company reduced the number of handlings which a unit would experience, made handling during assembly easier, speeded up packaging time, and reduced to almost zero, the amount of storage space required for shipping containers . . . all through package design.

Container Cuts Handling Time 66%

No packaging or handling method is ever perfect. Room for improvement always remains, particularly when the two functions are finally considered jointly. Sometimes studying for improvements of one function (either handling or packaging) will bring about unexpected improvements in

Question: **is there a difference between these two shipping containers?**

Ordinary Crate



**General
Engineered Container**



There is... and it was **Answer: worth \$8,000 a year to The Foxboro Company!**

...and the difference is General Container Engineering. Both containers hold a 925-lb. instrument cabinet. Both protect its precision instruments and satin finish during handling and shipment. Yet the one on the left weighs 400 lb. empty, takes two men and six man-hours to pack. While the General Engineered Container on the right weighs only 170 lb., can be packed by one man in just an hour and a half—*costs 42% less* than

the container on the left.

This outstanding dollar saving is the result of painstaking work in well-equipped packaging laboratories—where each container is designed and tested to fit the needs of each product—perfectly. You can get this service without charge, and without obligation. Write for details. And send for your free copy of "The General Box." It's loaded with cost-saving packaging ideas.

ENGINEERED CONTAINERS FOR EVERY SHIPPING NEED

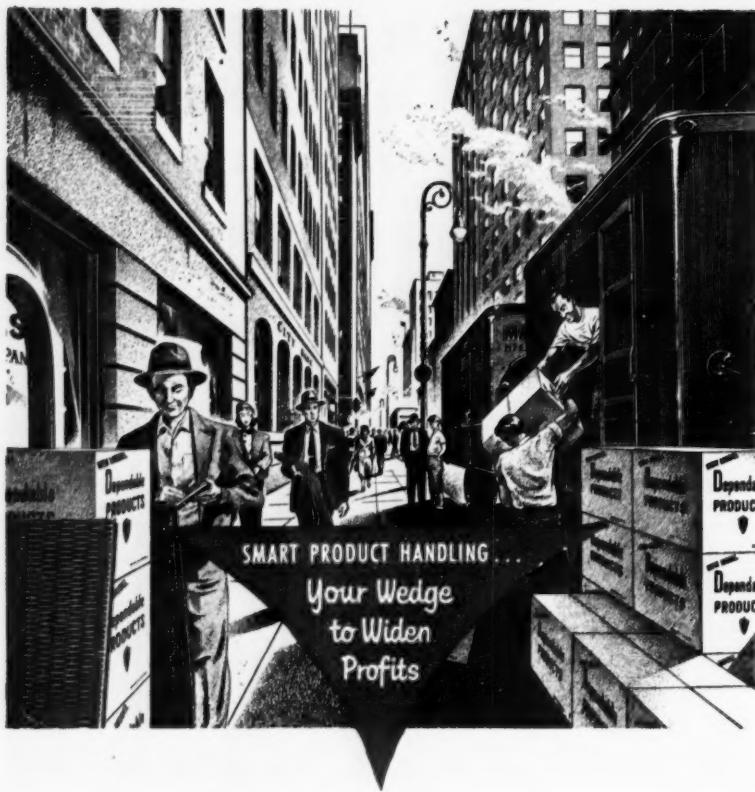
Factories: Cincinnati, Denville, N.J.; East St. Louis, Detroit, Kansas City, Louisville, Milwaukee; Prescott, Ark.; Sheboygan; Winchendon, Mass.; General Box Company of Mississippi, Meridian, Miss.; Continental Box Company, Inc., Houston.

General Box

GENERAL BOX COMPANY, 1857 MINER STREET, DES PLAINES, ILL.

★ ★ ★ ★

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Ship Your Sales Story Along With Your Product in Eye-Catching Gaylord Boxes

There are no extra freight charges for shipping a solid sales message on every attractively printed Gaylord box. You profit because your shipping dollars do double duty by promoting your product all along your channels of distribution. With these Gaylord "traveling billboards" you'll regularly reach hundreds of important buyers, sellers and handlers who see your product before it's unpacked.

Sizes, shapes and designs that work to promote your product, as well as to protect it, are an important Gaylord "extra" service . . . and with Gaylord's quality of materials and workmanship, you can be sure every box is as brawny as it is beautiful.

For information and cooperation, phone your nearby Gaylord office.

Gaylord Container Corporation

GENERAL OFFICES
SAINT LOUIS, MO.

SALES OFFICES
COAST-TO-COAST



CORRUGATED AND SOLID FIBRE BOXES • KRAFT PAPER AND SPECIALTIES • KRAFT BAGS AND SACKS • FOLDING CARTONS
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PACKAGING, A FACTOR IN EFFICIENT HANDLING

Continued

the other. Such was the case at Maytag Co. . . .

Automatic washing machines were shipped by Maytag in open type containers because they made possible quick detection of damage. In the search for more protection, Maytag turned to closed corrugated containers, but with some misgivings. If damage did not occur during handling, it would not be detected until packaged machines reached their destinations.

Tests were made with the proposed corrugated shipping container which consists of a tube section with three-inch flaps at both top and bottom. Caps with folding flaps fit over and interlock with the top and bottom of the tube section. Bands of $\frac{5}{8}$ -inch steel strapping are tensioned around each flap, resulting in a tight, permanent, quickly made seal. As a result of test shipments, it was found that the corrugated containers provided adequate protection, making it advisable to adopt them.

The results on handling have been excellent. Maytag replaced standard forks on its trucks with special short pick-up fingers designed to fit under the top flaps of the new containers. This, of course, reduced the over-all length of the trucks and, in effect, gave them increased maneuverability. Now, when loading railroad freight cars, these "forkless" lift trucks move in and out of the car more quickly and spot and stack packaged washing machines with greater accuracy than was possible previously. Two of the 245-pound steel strapped packages can be lifted at one time, further increasing handling efficiency. In fact, Maytag has reported a 66 per-cent saving in container handling time due to this novel packaging idea.

FLOW'S thanks to the following for information and photos used in the preceding article:

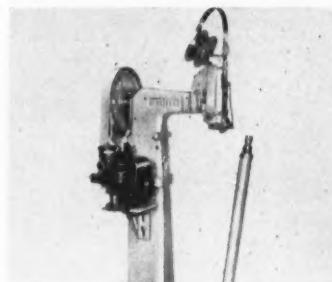
Acme Steel Co., Behr-Manning Corp., Gaylord Container Corp., Hinde & Dauch Paper Co., A. O. Smith Corp., Wirebound Box Mfrs. Assn.

WHAT'S NEW.. in Packaging and Shipping Equipment

Gas-Driven Stitcher

A gasoline-operated motor drive is now available with the Bostitch No. 14 and No. 148 box and bottom stitchers. With this power unit, it is now claimed to be possible to utilize wire stitching in locations where electric power is not available and to change the location of the stitcher frequently, if desired, without the necessity of arranging for electrical connections. Manufacturer is Bostitch.

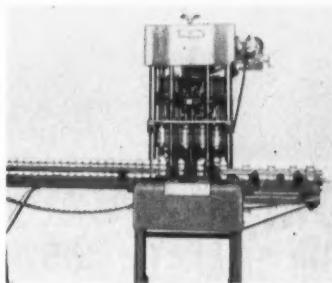
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Accurate Liquid Filling Machine

A volumetric liquid filling machine, accurate in filling at high speeds to within a tolerance of plus or minus one gram, has been developed by MRM Co., Inc. It consists of special filling heads which are adjustable for variation of fill by means of a specially threaded cylinder to a tolerance of one gram, plus or minus, per each cylinder revolution. The unit is a 12-spout machine with 60-100 containers per minute capacity. It is designed to fill liquids and semi-liquids.

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Pneumatic Strapping Stretchers

A new line of pneumatically powered tools for production line strapping applications has been developed by Acme Steel Co. They are said to be ideal where pre-determined, uniform tension is required. Each strap is applied with exactly the same tension as the one preceding. Tension can be changed by adjusting an air pressure regulator. The tools will handle straps $\frac{3}{8}$ to $\frac{3}{4}$ inches wide, in thicknesses from .010 to .023 inches, and they weigh from $3\frac{1}{2}$ to $9\frac{1}{2}$ lb.

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Filament Tape Hand Dispenser

A hand dispenser for tough tear-resistant filament tape has been announced by Minnesota Mining and Manufacturing Co. Main feature of the all-metal unit is a fixed saw-tooth cutting edge that permits the tape to be cut with a simple twist. The dispenser (officially named the Model H-120) also features a special ratchet mechanism that permits the roll to move forward as tape is used . . . thus facilitating handling.

Circle No. 194 on Reader Service Card for more information

(Continued on page 151)

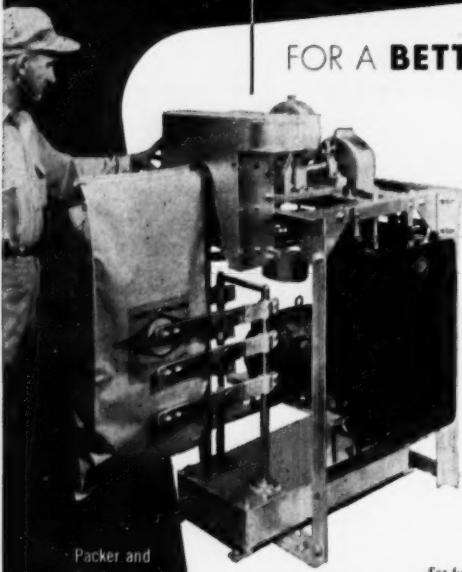


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BLACK DIAMOND
VALVE BAG

packer & settler

FOR A BETTER PACKAGE...



Packer and
Settler may be
purchased as
separate units.

investigate this new,
sensational combination
of automatic controlled
weight valve bag
packer and settler.

**EASIER HANDLING
& PALLETIZING
CLEAN—NO DRIBBLE
ACCURATE
ECONOMICAL
PERFORMANCE
GUARANTEED**

For further information, write

BLACK PRODUCTS COMPANY
13513 Calumet Ave., Chicago 27, Illinois • Dept. P34
MANUFACTURERS SINCE 1912

NOW! Load and Unload
Protected from
RAIN • SLEET • SNOW



when hand
wrapping with

Flexible SOF-RAP

You can speed up wrapping production with low cost, lightweight SOF-RAP. Men work "bare-handed" with no danger of cuts or bruises — no slow-downs from clumsy gloves. SOF-RAP contains no harsh cutting glues or silicates. That's why, too, it provides the perfect cushion protection for your product. Investigate TYPE C for interior cushion protection from shock, bounce and TYPE B for permitting slippage and preventing friction or abrasion damage. In sheets, rolls, tubes and bags.

FREE, HELPFUL BOOKLET



NICHOLS
PAPER PRODUCTS COMPANY

GREEN BAY - WISCONSIN



**Weather Screens
Low Cost Dock Covers**

All Weather Protection for
Materials, Men, and Machines

★ Warehouse to Boxcar

★ Warehouse to Truck

Representatives in all principal cities.

The Elwing Corp., Dept. F2
915 W. Adams St., Jacksonville 4, Fla.
Please send me information about Elwing.

Name _____
Company _____
Address _____

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148

Circle No. 106 on Reader Service Card

PACKAGING REQUIRES HANDLING KNOW-HOW . . .

(Continued from page 123)

many parts and are assembled along a conveyor running from close to the stockroom toward the test area. After basic assembly and testing, the final touches are applied on the finish-off line which conveys the assemblies from close to the test rooms to the door leading to the packaging department. After final inspection, the booster pumps are placed on rack trucks and wheeled to the packaging department where the packaging line runs from the door near the assembly area to the door leading to the shipping dock.

Layout for High Speed Operations

A manufacturer of toiletries recently built and put into operation a new plant for the manufacture and packaging of its various liquid, powder and paste products. To simplify movement of materials throughout the plant, all plans were worked out with an eye to problems which would be encountered in handling to, within and away from the packaging room.

Packaging lines were decided upon, with the beginning and end of each line situated in the general warehousing area. This was accomplished by locating the warehouse next to the packaging room (separating the two with a tile wall), and running conveyors to and from the packaging lines through openings in the wall. All storage, both of packaging materials and finished products, is done in that single warehouse.

Products are manufactured on the second floor of the building, in an area above the packaging room (each packaging line is directly beneath the equipment which makes the particular product it will handle). Thus, product movement has been reduced to a minimum.

Packaging material is supplied to machines in each packaging line by specially designed platform trucks. They are moved in manually from the warehouse and parked adjacent to the machines.

When the lines are in operation,

FLOW • APRIL, 1954



Kitchen wall, sink and base cabinets like these are shipped in corrugated cartons closed by International Staplers.

Harrison
saves
\$28,000
per year

with International Carton Stapling Machines



\$28,000 saved in a year . . . \$112,000 in the last four years! Unbelievable? Chester C. Cain, executive vice president of Harrison Steel Cabinet Co., Chicago, found it hard to believe, too. But read what he has to say:

"Four years ago we installed two International Retractable Anvil Stapling Machines to close corrugated shipping cartons for our line of kitchen wall cabinets, sink cabinets and base cabinets. We staple the tops and bottoms simultaneously after the cabinets are in the cartons. The machines . . . one for regular production . . . one for overflow production . . . cost \$1,640 each.

"A year later, figures showed our packaging costs had gone down \$28,000. Working conditions were easier for our men . . . and the equipment had paid for itself in only a month and a half.

"Formerly, we packaged about 300 units each 8-hour day, using 13 or 14 men to set up boxes, seal the bottoms, place cabinets inside, and seal the tops.

"Now with only 6 men . . . one to operate the stapler, and the rest to pack and feed, we're closing 600 cartons each 8-hour day . . . twice as many, and the closures are better."

If you ship in corrugated or fibre containers, an International Retractable Anvil Stapling Machine can close them better, faster and more economically. Write for detailed information.

a seal of security



INTERNATIONAL STAPLING MACHINES

International Staple & Machine Company
808 East Herrin Street, Herrin, Illinois

Circle No. 175 on Reader Service Card for more information

HERE'S HOW YOU CAN SAVE DOLLARS



Reusable, Hermetically Sealed
Metal Shipping Container — Dirt Free
Moisture Free — Shock Resistant

Many manufacturers are saving thousands of dollars per year by using Champion reusable metal shipping containers. You can profit through this savings, too!

HERE'S HOW

Due to perfect protection:

1. From rust and dirt, you have less loss of damaged products.
2. Against shock, your damage claims are practically eliminated.

OTHER SAVINGS

3. You save labor costs, since no special preparation is needed before shipment or storage.
4. You, or the purchaser, will be glad to know that the product is ready for use as soon as it is removed from the Champion Metal Container.

**A CHAMPION METAL CONTAINER
CAN BE SPECIALLY DESIGNED
FOR YOUR PRODUCT**

WRITE TODAY FOR INFORMATION

**THE CHAMPION
COMPANY**

SPRINGFIELD 99, OHIO
Circle No. 35 on Reader Service Card
150

PACKAGING REQUIRES HANDLING KNOW-HOW

Continued

palletized boxes of containers, (bottles, powder cans, etc.) are delivered to the beginning of each packaging line (on the warehouse side of the wall) by fork trucks. Speed of the operation is such that after the fork truck has deposited a load of empty containers at the beginning of the line, can pick up a completed pallet load of packaged products from the end of the packaging line, only a few feet away, and transport it to the warehouse. Through such coordination of all handling activities, a high degree of efficiency has been achieved in the entire plant.

Another fine example of a complex packaging department which was made highly efficient through carefully planned handling, is at the White Laboratories pharmaceutical plant, Kenilworth, New Jersey. Here, various tablets, troches, capsules, ointments and liquid products are packaged.

The manufacturing and storage area for liquid products is located adjacent to the packaging room, and a convenient system of pipes feeds directly to the filling machines. The discharge of several of the packaging lines in the room is to a common set of horizontal gravity roller conveyors. They conduct cartons of finished product to another area, in the warehouse for sealing.

For the packaging of tablets, a unique handling method has been devised. One-day storage hoppers are utilized to feed each packaging line. Tablets are loaded into the hoppers in the manufacturing area. Then, hoppers are moved into the packaging room when required by filling machines. In operation, each hopper discharges tablets from its conical bottom into a bucket conveyor which, in turn, feeds into automatic packing machines. Packaging is completed, by placing the individual containers into corrugated shipping cases. These are then palletized and moved to the warehouse with powerized walkie type lift trucks.

Another Triumph of Derby's Designing and Engineering Skill!

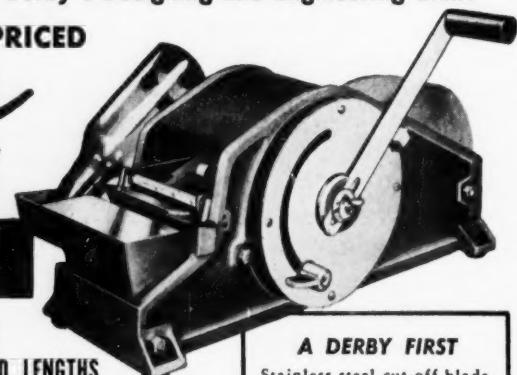
THE MEDIUM PRICED

Super
DERBY
"152"

SENSATIONAL DISPENSER

DELIVERS PREDETERMINED LENGTHS

OF GUMMED TAPE UP TO 30", (1" TO 3" WIDE)



A DERBY FIRST

Stainless steel cut-off blade,
guaranteed for life of machine.

LOOK AT THESE QUALITY DERBY FEATURES

- Exclusive spring clutch feed
- Visible auxiliary water reservoir
- Adjustable, variable-length handle
- Larger interlocking side frame construction
- Measuring feed stop
- Automatic tape cut-off
- Visual measuring scale
- Water heater available at extra cost

See your dealer or write

DERBY SEALERS INC.

Derby, Connecticut

Circle No. 45 on Reader Service Card for more information

FLOW • APRIL, 1954

PACKAGING AND SHIPPING NEW EQUIPMENT . . .

(Continued from page 147)

Bag Closer Maintenance Materials

Three new products specially prepared for maintenance of the Fischbein Portable Bag Closer have been introduced by the Dave Fischbein Co.

A special lubricating oil has been developed to properly lubricate all parts of the company's Portable Bag Closer, even under the most adverse conditions. The oil is also said to flush

out abrasive dirt and dust that accumulates on parts. Also available, is a cleaning solvent that was developed to clean food mechanism parts. It washes out abrasive and harmful dirt in a matter of seconds. The third product in the new Fischbein line is a thread lubricant which is used when closing treated, water-proofed or specially processed paper or textile bags. This product is said to thoroughly saturate an entire cone of thread in a few seconds.

Circle 195 on Reader Service Card for more information



Circle No. 168 on Reader Service Card for more information



With as little as \$30 worth of ALGENE marking equipment, many firms have made profits of several thousands of dollars due to savings in labor, time and inventory of printed boxes.

The self-inking, light weight ALGENE Printer performs 9 times faster than stenciling, labeling, or rubber stamping—and your workmen prefer it! You can have combinations of marking in one operation. Thousands are in successful use in all industries. Many sizes and models available. Write for free 8-page catalog today.

ALGENE "Quick-Change" PLATES Complete Message Changed in Seconds

Capable of producing over 1,000,000 impressions, ALGENE "Quick-Change" plates are made to your specifications at the nominal cost of \$3 to \$4 per plate. ALGENE Printers can be used also with interchangeable type in any size from 1/16" to giant 1 1/2" letters.



algene marking equipment co.
mfgs. of hand & automatic marking machines
232-B PALISADE AVE., GARFIELD, NEW JERSEY

LUKE LAUGHNER, a typical Counterboy man, has an enviable reputation helping packers make each sealed carton a good will builder for their company.

His broad packaging knowledge is based on 14 years working to help shippers, first in New York and later in Western Ohio, with headquarters at Cleveland.

Your Counterboy man is listed in the yellow pages of your phone book. Call today!

See our full line of dispensers
BOOTH 234—AMA Packaging Show—April 5-8

Counterboy SEALED!

Better Packages, Inc.
SHELTON, CONN.
WORLD'S LARGEST MANUFACTURERS OF TAPE DISPENSERS

FREE WRITE FOR TECHNICAL BULLETINS.
BETTER PACKAGES, INC.
PLANT NO. 1-D, 253 CANAL STREET, SHELTON, CONN.

#3 Tape Moistening Requirements for Various Carton Surfaces

#5 Gummied Tape Glues and Adhesives

#7 Superiority of Gummied Tape Closure

#9 Tape Applications—Building Strength from Weakness

#11 Hot Water versus Dry Glue

#12 Carton Sealing—The Easy Way

#13 Parcel Post Wrap

#16 Tape Widths and Weights

Send us a Counterboy man to survey our Methods and Materials

Company _____

Signed _____ Title _____

Address _____

City _____ Zone _____ State _____

Counterboy ADJUSTABLE MOISTENING CONTROL:

- Protects your Product • Saves your tape • Saves your labor costs
- Improves your carton's appearance • Impresses your customers

The counsel of Better Packages' 70 Counterboy field experts on materials and methods is yours for the asking. They can help you:

- Reactivate all the glue on your sealing tape • Select special purpose tapes
- Train employees to apply tape correctly
- Save time and tape • Systematize your tape closure procedure

Circle No. 22 on Reader Service Card for more information



TAPE-STRAP[®] reinforcement cuts costs 30% and bats 1000 for Pheoll

These Belsinger Boxes carry a heavy load of the nuts, bolts, or screws made by the Pheoll Manufacturing Co., Chicago. A shipment like this is a tough test of any carton and its reinforcement . . . yet the two sections of these boxes are securely held with only four short strips of Tape-Strap gummed filament tape!

Before changing to Tape-Strap reinforcement, Pheoll used two all-around lengths of rigid strapping, mechanically applied. Now, with Tape-Strap, time and material savings have cut packaging costs 30%. There hasn't been a packaging failure, yet. Tape-Strap has batted 1000 in a tough league.

If you now use mechanically applied reinforcement for paperboard cartons, or if you are shipping in more costly containers, maybe you, too, can cut packaging costs with Tape-Strap.

Why not find out more about Tape-Strap? Write for free sample roll and complete data.

LEADERS IN THEIR LINE

MID-STATES Gummed Paper Company
2525 South Damen Avenue, Chicago 8, Illinois
New York • Boston • Philadelphia • Cleveland • Detroit • St. Louis • Atlanta • Los Angeles

Circle No. 99 on Reader Service Card for more information

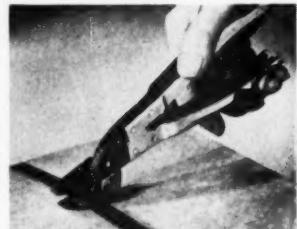
152

PACKAGING AND SHIPPING NEW EQUIPMENT

Continued

Light-Weight Strap Cutter

A strap cutter weighing less than one pound and balanced to fit the hand while cutting strapping up to and including $\frac{3}{4}''$ x .035" has been developed by A. J. Gerrard & Co. It is said to do the job quickly and easily and to leave a smooth, straight edge. Cutting blades are said to be made of precision ground tool steel and can be re-sharpened when necessary, thereby adding to life of the tool. Spring tension holds the blades apart for ready use.

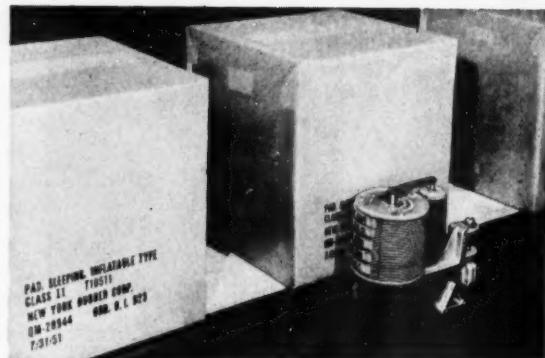


Circle 196 on Reader Services Card for more information

New Line of Tapes

Paramount Paper Products has introduced a new line of pressure-sensitive tape, known as Pres-It-On. The group includes acetate, paper,

Low-cost conveyor attachment marks cartons, cases automatically



Save man-hours now used for manual marking. Attach a ROLACODER Imprinter to conveyor or case-sealer and eliminate the cost of stenciling or rubber-stamping. Get neater, cleaner, more accurate marking, too. Friction-operated, self-inking. Copy changes made in minutes. Pays for itself in weeks.

Write for ROLACODER brochure showing models to imprint top, sides of every kind of package.

Gottsch

ADOLPH GOTTSCHO, INC.

Hillside 5, N. J.

50
Years of
Leadership

In Canada: RICHARDSON AGENCIES, LTD., Toronto & Montreal
Circle No. 71 on Reader Service Card for more information

FLOW • APRIL, 1954

cloth ribbon and cellophane tapes. For many years, Paramount has been a primary source for all types and kinds of printed tapes. Pres-It-On tapes are available in all standard widths and a variety of colors. Each roll is sealed in a flat polyethylene bag to assure cleanliness, longer shelf life and to prevent one roll from sticking to another.

Circle 197 on Reader Service Card for more information

Wide-Staple Hammer Tacker

This automatic hammer tacker, made by Fastener Corp., is claimed to drive heavy $\frac{3}{8}$ ", $\frac{1}{2}$ " and $9/16$ " length staples which are twice as broad as usual staples.



The purpose of this broad staple is to prevent tearing through certain types of materials

which are stapled down. Designated the HT-100, the new model features a protector-shield on the trip lever to further protect the material from damage.

Circle 198 on Reader Service Card for more information

the grip of an **iron fist**



in a soft **velvet glove**



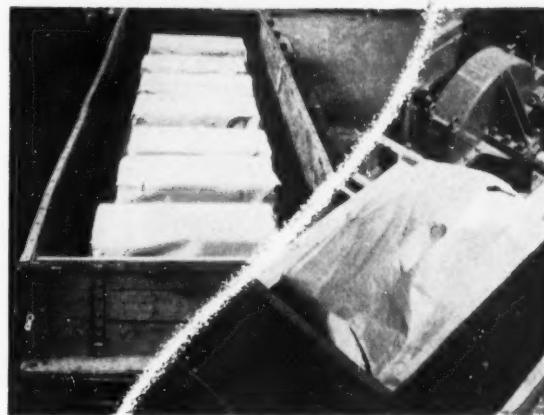
cush-on-strap by Sackner

A patented Steel Strapping faced with soft, fluffy cellulose padding. CUSH-ON-STRAP is prescored to desired lengths and ready for immediate use. Ideal for packing all types of appliances and other finished metal products.



Circle No. 119 on Reader Service Card for more information
FLOW • APRIL, 1954

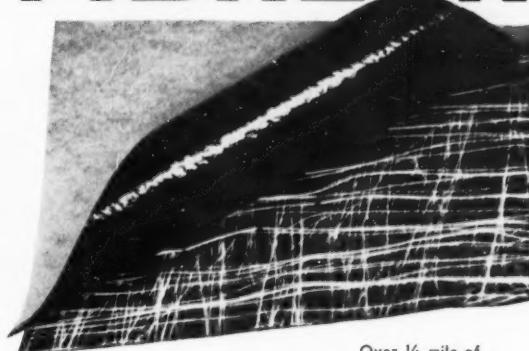
OPEN AIR SHIPPING PROTECTION



OPEN AIR STORAGE PROTECTION

Use **Moisture-Proof, Dirt-Proof, Strong**

FIBREEN



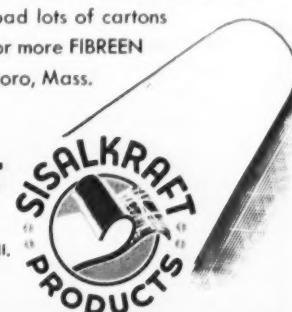
Over $\frac{1}{4}$ mile of reinforcing fibres per square yard

Only in this specially treated paper with its steel-strong reinforcements do you get such a combination of economy with positive protection against driving rain, abrasive dirt and rough handling.

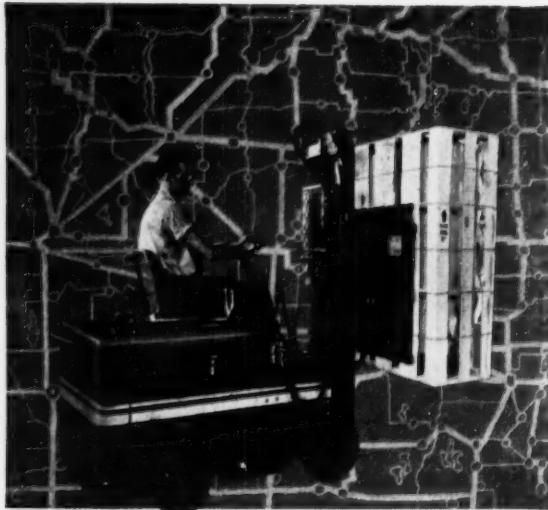
If you are responsible for goods in open air storage or transit or carload lots of cartons or cases write today for more FIBREEN facts. Dept. F-4, Attleboro, Mass.

AMERICAN
SISALKRAFT
CORPORATION

Attleboro, Mass., Chicago 6, Ill.
New York 17, N. Y.
San Francisco 5, Calif.



Circle No. 14 on Reader Service Card for more information
153



**Your handling goes modern
when your product goes
WIREBOUND!**



It's easy to see how you put new life in your handling operation when you put your product in a Wirebound. For with Wirebound's unique construction of strong steel wire and light, tough wood—your product gets the best in protection while you get a container that adapts to an infinite variety of handling procedures. Just how well Wirebounds suit up-to-date handling methods is shown above where a heater manufacturer moves Wirebounds with a finger-lift truck to achieve easier, speedier storage in really close quarters. Remember—no matter what you handle or how you handle it... you'll handle it better when it's a Wirebound box, crate or pallet box.

MAIL THIS COUPON NOW!

WIREBOUND BOX MANUFACTURERS ASSOCIATION

Room 1171, 327 South LaSalle Street, Chicago, Illinois

Have a sales engineer give me the whole story
 Send me a copy of "What to Expect from Wirebounds"

Name _____

Firm Name _____

Address _____

City, Zone and State _____

Circle No. 172 on Reader Service Card for more information
154

PROTECTIVE PACKAGING . . .

(Continued from page 133)

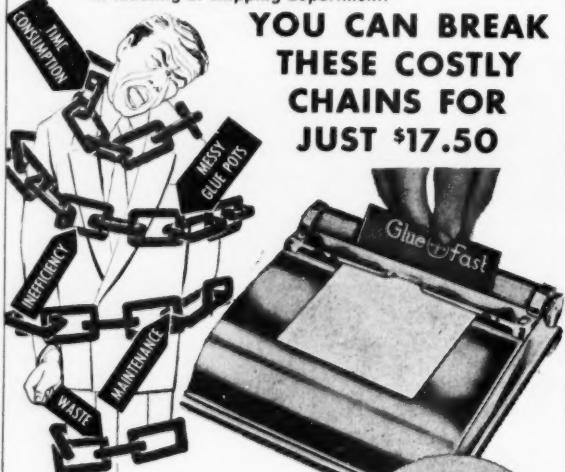
addresses, identification codes and directions for handling, will speed handling, make handling safer, and help make easier the jobs of everyone who will handle your product from the time it leaves your plant until it reaches the customer. Under the right conditions any of the following marking devices will do a good job; crayons, marking pens, tags, and labels, addressing machines, hand markers, conveyor line markers, dies, stamps, automatic rotary imprinters, printing rolls, stencils, printed paper tapes and printed pressure-sensitive tapes.

Just remember to put all necessary information concerning weight, lot, route, destination in clear, large, permanent letters on every package in any shipment. Remember too, that when packages are due to travel to an overseas destination, they may be handled by personnel not able to read English. It may be necessary, then, to mark a single package with all information repeated in several languages.

Pilferage a Problem

Pilferage is a serious problem everywhere. It seems to be particularly rough, however, when packages must

In labeling or shipping department:



Stop laboring under old fashioned costly methods of attaching labels! Switch to the modern Glue-Fast Method. In the Glue-Fast Model BX LABEL GLUER you'll find the answer to many of your labeling problems - from cost to production - as have thousands of large and small users all over the world. USE UNGLUDED LABELS. PROPERLY APPLIED TO STAY PUT WITH LESS GLUE. DO IT FASTER WITH LESS FUSS AND BOTHER. BEFORE DURING AND AFTER THE DAY'S WORK! NEW GLIQUID GLUE STAYS FOR DAYS FOR DAYS! CRYSTALLIZING!

FREE TRIAL OFFER!
 Attach coupon to letterhead
 today! Enjoy better work
 tomorrow! at lower cost tomorrow!

*Unprinted 6" dia. die-cut, chrome plated, 8 1/2" 50" long.
 West of the Rockies: 9" and 13" sizes, can bronze, highly polished, proportionately low priced.

Glue-Fast EQUIPMENT CO., INC.
 411 WHITE STREET - NEW YORK 11, N.Y. - MURRAY 5-6142

We attach company letterhead. Please send Model BX Label Gluer on 10-day trial with supply of GLUE-FAST LIQUID GLUE... for adhesion of _____

Circle No. 161 on Reader Service Card for more information
FLOW • APRIL, 1954

travel through, and are stored at, international shipping points. Protection here is best accomplished through use of containers which cannot be opened readily except with proper tools. The use of code numbers instead of the names of items within packages tend to reduce the temptation on the part of pilferers.

A mid-west manufacturer at one time had a high rate of pilferage of vital parts of crawler tractors which it exports. The tractors are shipped intact. Through the use of a unique type of wirebound hood for covering engines, controls, seats, and other exposed pilferable parts, they have greatly reduced that problem.

Hoods have been designed to make cutting of binding wires necessary to get at removable parts. This, of course, would be instantly detectable. Tampering by unauthorized persons has been curbed because hoods cannot be removed quickly.

The hood which protects the tractors consists of a lightweight top and four wirebound panels and is assembled by one worker. Side and end panels are nailed to the hood and securely fastened to each other simply by engaging and folding wire loop fasteners at each corner. Two steel bands, about nine inches long, are nailed to each corner for further protection. A completed hood is placed over a tractor and bolted and steel strapped to it. Packaging has been kept relatively simple, tare weights have been kept at a minimum, and loss of profits through pilferage is no longer a problem.



IT'S FREE!

new
EQUIPTO
BOOKLET

Helps lick toughest
storage problems!

**How to solve
your storage
problems**

IT'S FREE!

new
EQUIPTO
BOOKLET

Helps lick toughest
storage problems!

Here's "must" reading for anyone who plans, buys, or uses storage equipment. Shows how you can have custom-arranged facilities, yet pay only the price of standardized units. Learn how to survey, make floor plans and elevations of your own particular requirements. Change arrangement of components anytime. Buy only what you need; expand as you go. Mail coupon today for your free copy.

EQUIPTO — 805 Prairie Avenue, Aurora, Illinois
Please send me copy of new Equipto Booklet entitled "How to Solve Your Storage Problems". I understand that there is no charge or obligation of any kind.

NAME _____

FIRM NAME _____

ADDRESS _____

CITY _____

ZONE _____ STATE _____

Division of
Aurora Equipment Company
805 Prairie Avenue, Aurora, Illinois

Equipto

Circle No. 13 on Reader Service Card for more information
FLOW • APRIL, 1954

Circle No. 163 on Reader Service Card for more information

**6 Reasons why YOU need
the New "BUSTER"**



Strap Breaker

Opens STEEL-STRAPPED CONTAINERS in a Jiffy

- 1. Pays for itself in a month's time!
- 2. Removes hazards of makeshift tools.
- 3. Valuable where heavy loads are handled right up to the machines. Use it once and you'll never be without it!
- 4. Speeds car unloading.
- 5. Rugged—made to last. No sharpening or maintenance—Heat treated parts—last indefinitely.
- 6. Fast—Efficient—Safe.

\$4.95

Higher Wt. of the Box

18 INCH HANDLE

HARDENED STEEL HEAD

SLOT TAKES 2" STRAPPING

THE Lidseen COMPANY

836 S. Central Ave., Austin 7-2481, Chicago 44, Ill.

YOU Can Build

Your Own Overhead Conveyor

with UN-O-VEYOR parts



Now you can lay out and erect your own overhead conveyor from standard UN-O-VEYOR parts at a price within the budget of *every* plant. Only UN-O-VEYOR has exclusive patented universal-jointed flexible chain with unique self-locking principle for fast assembly.

For complete details, illustrations, and installation instructions, WRITE FOR OUR NEW 16-PAGE CATALOG.

DEALERS WANTED

**Michna
SYSTEMS**

4566 W. 61st St.
Chicago 28, Ill.

Circle No. 170 on Reader Service Card for more information



in useful FREE literature

These publications, written by experts, are FREE. Indicate your choice on the self-mailing Readers Service Card.

Continuous Power Conveyor:

A new sixty-four page catalog illustrating and describing the Zig-Zag continuous power conveyor and safe-rail track, just has been released by Richards-Wilcox Manufacturing Company. Engineering drawings, actual dimensions and other vital figures important to engineers are given.

Circle 218 on Reader Service Card

Chain Hoist:

The full line of chain hoists manufactured by the Harnischfeger Corporation is depicted in a complete bulletin just released by this company. Printed in two colors, the bulletin covers all types of hoists from $\frac{1}{4}$ ton up to 25 ton capacity.

Circle 219 on Reader Service Card

Pneumatic Conveyor:

The handling of bulk materials through the use of pneumatic conveyors is described in a colorful brochure available from Holly Pneumatic Systems, Inc. Economy, cleanliness and flexibility are stressed.

Circle 220 on Reader Service Card

Factory News:

The latest Clark Equipment Company News bulletin is off the press, and is available upon request. Read for yourself the inside story of this manufacturing plant, its products and employees.

Circle 221 on Reader Service Card

Slide Rule:

A handy, free conveyor case-history slide rule is available from the Rapids-Standard Company, Inc. Over 80 factual field reports are listed, together with 15 general types of handling problems. Specification bulletins on the equipment best suited to solving particular situations are also offered.

Circle 222 on Reader Service Card

"Inside-Outside" Truck:

An eight page illustrated catalog on the YT-40 lift truck is available from the Hyster Company. The trunnion-mounted steering and pneumatic tires are featured on this 4000-pound unit, which is said to be an all-purpose, inside-outside truck.

Circle 223 on Reader Service Card

Step Ladder:

Safety and economy are stressed by the Ballymore Company in its latest release on industrial step ladders. Available in from one to eight steps, the ladders are of all steel construction, and are equipped with rolling casters and rubber-tipped legs.

Circle 224 on Reader Service Card

Container Units:

A three-color, four page illustrated booklet has been released by the Union Metal Manufacturing Company, describing its entire line of containers. Publication

shows how Work-O-Matic units are used to work-position, dump, store, collect and transfer a variety of materials and scrap.

Circle 225 on Reader Service Card

A-C Motor Chart:

A selection wall chart which shows the comparison between "old" and "new" NEMA standard dimensions for a-c motors from 1 to 30 hp is available from Westinghouse Electric Corporation. The chart is meant to provide a handy reference for determining differences in frame dimensions.

Circle 226 on Reader Service Card

Loading Machine:

Detailed specifications on the NL-2 "Loadall" are contained in the colorful brochure available from N. P. Nelson Iron Works, Inc. The unit is said to be ideal for loading sand, coal, gravel and many other materials, without belt changes or use of special attachments.

Circle 227 on Reader Service Card

"Modern Service" Described:

Of special interest to machine owners will be the Caterpillar Tractor Company publication entitled, "The Story of Modern Service". This booklet, generously illustrated, discusses the service methods used by its dealers, both in the shop and in the field.

Circle 228 on Reader Service Card

Railroad Brochure:

The modern way to attack rising handling costs for railroad people is described in a new illustrated booklet published by the Hyster Company. Termed "Operation Hyster", this publication contains many material handling ideas and case type studies in loose form together with on-the-scene photos. Circle 229 on Reader Service Card

Battery Calculator:

The time formerly required to calculate battery size needs has been reduced by two-thirds, according to Automatic Transportation Company. Three simplified charts are available from this company. The charts determine for the electric truck user the proper size battery for any industrial truck installation.

Circle 230 on Reader Service Card

Color Sound Movie:

Some 18,000 miles and 6 months time were required to produce "The Big Lift", a color sound movie released by the Construction Equipment Division of Baldwin-Lima-Hamilton Corporation. The 29-minute, 16 mm film tells an on-the-job story of the excavating equipment industry. It's available to clubs, associations and engineering and student groups.

Circle 231 on Reader Service Card

Adjustable Dock Ramp:

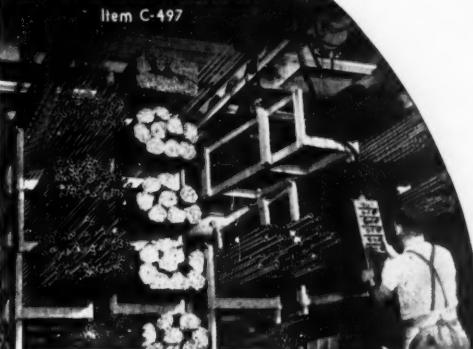
A profusely illustrated catalog sheet, detailing a 10,000 pound capacity hydraulic adjustable dock ramp has been issued by Rowe Methods Inc. Known as the Commercial Adjust-A-Dock, Model No. 6 N.F., the unit may be recessed in the dock, completely or partially, or installed in front of the dock. Complete specifications are listed in the catalog.

Circle 232 on Reader Service Card

CONSULT P.S. FOR THE BEST Materials Handling Equipment

PORTABLE Heavy Duty BAR RACKS Any Rack Easily Accessible

Item C-497



Item
B-731
\$181.50



DRUM
and
BARREL
TILT

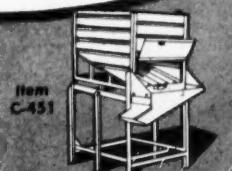
A barrel tilt for controlled, precision dumping or pouring. Ideal for chemicals, solvents, powders, etc. Turns 360° through worm drive. Equipped with two safety type locking devices and all-steel, welded yoke. Hand-operated chain drive.

Industrial DUST PAN



Item
C-608

Automatic
END DUMP



Item
C-451

Sloped Bottom
BOX and STAND



Item
S-911

BARREL TRUCK
loads automatically



Item
B-391

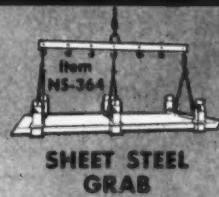
MULTI-PURPOSE
CART

WHEN ORDERING always give
"Item" number. ALL PRICES are f.o.b. Detroit. Prices are subject to
change without notice. Write for Catalog.

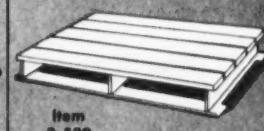
DESIGNED AND MANUFACTURED BY

Palmer-Shile Co.
16012 FULLERTON AVE., DETROIT 27, MICH.

Circle 87 on Reader Service Card



Sheet Steel
GRAB
Item NS-364



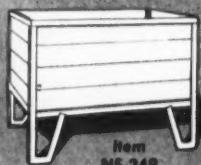
Item
B-539

All metal
PALLET



Item
50975

AIR
SAVER
leak proof
AIR VALVE



Item
NS-249

WOOD BOX
metal bound

Magnesium Ramp:

Speed in bridge and truck ramp loading are pointed out by Bronco Products Company in its new four page brochure. Standard specifications for carloading ramps are also given.

Circle 233 on Reader Service Card

dling men is to be found in the Winter Issue of "Handling Materials Illustrated", published by Towmotor Corporation. The latest lift truck developments and technological improvements form the basis of the issue, which may be obtained free on request.

Circle 234 on Reader Service Card

G. B. Lewis Company industrial containers are shown in its new booklet. Nine various stock sizes available for stacking, storing, shipping or processing of materials are depicted in detail. The construction, uniformity and ease of handling are featured.

Circle 235 on Reader Service Card

Handling Applications:

A wide range of topics of compelling interest to material han-

Industrial Containers:

Typical installation pictures of

**NOW! A FREIGHT ELEVATOR
ON THE BACK OF
YOUR TRUCK . . . with
only one lever, one cylinder
TO DO ALL OPERATIONS**

Efficient material handling into and out of trucks is now at its peak of perfection. So simple—so safe one man can handle loads up to 4000 lbs.—at one time. Load or unload anything, anywhere. Anthony design eliminates time-consuming operations—does this without extra cylinders, valves, controls, etc. A complete range of capacities for all trucks and semi-trailers.

New Brochure shows HOW you can save up to 50% on your trucking costs. Send for your copy today.

POWER
OPENING
CLOSING
LIFTING
LOWERING

Pat'd. & Pats. Pend.
U.S. and Foreign



ANTHONY
LIFT® GATES
The Power to lower delivery costs

ANTHONY COMPANY • STREATOR, ILLINOIS
DEPT. 5403-A

Circle No. 169 on Reader Service Card for more information

158

Pulpwood Handling:

A new 16 page book has just been released by The Thew Shovel Company. The story of mechanized pulpwood handling from the woods to the mill is told graphically with large, full page illustrations and job descriptions.

Circle 236 on Reader Service Card

Electrical Distribution System:

The "100" ampere steel-enclosed trolley busway system of electrification has been catalogued in a 44 page bulletin available from the Feedrail Corporation. The bulletin illustrates and describes the track, trolleys and accessories used in the electrification of moving equipment that must be powered.

Circle 237 on Reader Service Card

Carpet Problem Solved:

The economy cut-order system for retail carpet workrooms is described in a recent bulletin by the EASQUIP Company, a Division of the Roberts Company. If furnished workroom dimensions, this company will send you, without cost, a detailed layout showing how their equipment fits into your operation.

Circle 238 on Reader Service Card

Safety Clips:

How to speed your wire rope fastening and get maximum safety is interestingly presented by American Hoist & Derrick Company in a colorful brochure.

Circle 239 on Reader Service Card

FLOW • APRIL, 1954

Power Shovels & Cranes:

The 1-yard Lorain "50" Series, which covers the crawler-mounted power shovels and cranes, is pictured and described in a new 24-page, two-color bulletin published by The Thew Shovel Company. Design and construction illustrations highlight the booklet.

Circle 240 on Reader Service Card

templates, stationing of templates and the reproducing of negative and positive plates is discussed in this informative bulletin.

Circle 242 on Reader Service Card

Steel Strapping:

The Gerrard Steel Strapping Division of U. S. Steel has published a brochure describing the use of its heavy duty flat steel strapping system. Photographs and technical data are included.

Circle 241 on Reader Service Card

Hoists and Derricks:

A concise catalog published by American Hoist & Derrick Company pictures and describes a number of the many uses for its products in American industry. Individual catalogs on each item, showing the range of sizes and capacities, are also available.

Circle 243 on Reader Service Card

Circle No. 125 on Reader Service Card



Pat. 2,621,821 & 3,072

Increase Your Storage Capacity

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SWING-SHIFT UNIT

HYDRAULIC FORK CONTROL ATTACHMENT

ADDED TO YOUR LIFT TRUCK

Ask us how SWING-SHIFT:

- Speeds car and truck loading
- Turns corners in narrower aisles and tight spaces.
- Eliminates all non-productive maneuvering
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UNITS AVAILABLE FROM 3,000
TO 16,000 LB. CAPACITY

See Your Lift Truck Dealer or Write

SWING-SHIFT MFG. CO.

P. O. BOX 957
LONGVIEW, WASHINGTON

Plant Layout Procedures:

The use of photocopy in plant layout procedures is described in a bulletin published by Peerless Photo Products Inc. The making of floor plans, drafting of scaled

Hydraulic Cranes:

The 1954 catalog of Ruger Equipment Inc., covering its line of hand powered hydraulic cranes is entitled "The First and The Best". Both floor and truck mounted cranes are presented in this free catalog.

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Troubled with broken floors?

Fix Them Fast With

SPEED PATCH

without halting traffic

World's finest fastest floor fixer! Simply patch holes and truck over them immediately, no waiting. Ready-mixed. Millions of pounds used regularly by industry. Write for details.

Takes only one minute per sq. ft.



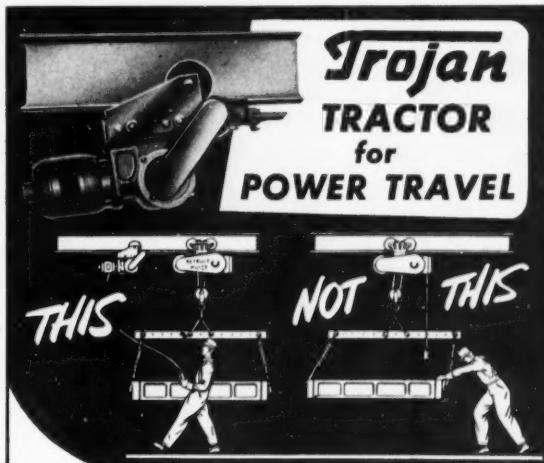
RECK-TRED Corporation

Manufacturers of a Complete Line of Building Maintenance Materials
7440-7450 North St. Louis Avenue • Skokie, Illinois
In Canada: Reck-Tred Corporation (Canada) Limited, Toronto 5



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FLOW • APRIL, 1954



Attached by a simple draw-bar, the Trojan Tractor quickly converts existing, slow, hand-pushed hoists and light overhead cranes into fast, power-traveled units. Save time, effort; reduce material handling costs.

• Ask for Trojan Tractor Bulletin 810 today.

DETROIT HOIST & MACHINE CO.

8263 Morrow St., Detroit 11, Mich.

Designers and Manufacturers of Hoists and Cranes

Since 1905



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159

Circle No. 147 on Reader Service Card for more information

Moves Materials at 15 mph.

WISCONSIN-POWERED



Industrial Truck

More work is done by only one man with this unit built by Getman Brothers, Mfg. Div., South Haven, Mich. Power is supplied by a single-cylinder, model AEN 8 1/4 hp. Wisconsin Heavy-Duty Air-Cooled Engine. Wisconsin Engines are delivering dependability everywhere on 3 to 36 hp. equipment. One reason equipment builders and buyers endorse them is due to thrust-absorbing tapered roller bearings at both ends of every crankshaft, preventing bearing failure. Still another is better air-cooling system design, engineered by pioneers in the air-cooled field, for perfect hot or cold weather cooling. You also get such advantages as heaviest-duty construction and an ignition system delivering quick any-weather starts. All add up to more dependable performance, and lower operating costs. Write for 64-page booklet about all 4-cycle single-cylinder, 2-cylinder and V-type 4-cylinder models, 3 to 36 hp. . . . also over 270 action pictures.



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 48, WISCONSIN

CO-ORDINATED UNITS

in... EUCLID Electric CRANES



Planned cooperation between material handling units can be a vital factor in speeding production and lowering cost.

Here, for example, is a Euclid half-gantry crane designed to cooperate with the larger Euclid overhead crane and lift trucks. The installation is in the assembly bay of a large steel fabricating plant.

Parts are brought in by the lift truck. Sub-assemblies are handled by the half-

gantry crane. As the assembling operations progress the larger units are moved by the overhead crane and the completed machine finally carried to the testing department.

Think of cranes as production tools and ask our engineers to give you the benefit of their long experience in speeding production with overhead handling equipment. It will entail no obligation.



The EUCLID CRANE & HOIST CO.

1362 CHARDON ROAD
EUCLID, OHIO

Circle No. 56 on Reader Service Card for more information

WAREHOUSING COSTS . . .

(Continued from page 75)

touch labor cost and clerical labor cost, per unit handled.

2. Why High Warehouse Ceilings?

Because "cubage" costs less than footage. A warehouse built for \$6 a square foot with a clear height of 15 feet costs 40 cents a cubic foot. But if the clear height is raised to 20 feet, the extra five feet of wall will add so little to the total cost of the structure that it will cost only a trifle over 30 cents a cubic foot. And every one of the 20 feet is usable.

The overall height of a double-decked rack is 8 feet, 5 inches (101 inches), and if three pallets are stacked on the top level, a height of 233 inches or 19 feet, 5 inches is reached, allowing a seven-inch working clearance under truss, girder, or beam, which itself is at least 12 inches thick. Thus, the gross clearance for insurance or fire department regula-

Improve Your MATERIAL HANDLING!

The 1954-55 Flow Directory

Is a MUST for
Your Desk or Library

This completely new, up-to-the minute directory is the only permanent complete volume of authoritative information about material handling, packaging and shipping equipment and accessories. Its definitions are used as standard by all engineering societies, by virtually all associations, and by military and industrial groups.

The Directory's 772 pages are arranged in six convenient, thumb-indexed sections for quick, easy reference:

- Equipment and Manufacturers
- Manufacturers' Outlets
- Trade Name Index
- Engineering and Technical Data
- Manufacturers' Catalogs
- Where to Buy or Rent Equipment

Price \$6.50

Mail your order to
The Industrial Book Co.,
1240 Ontario St.
Cleveland 13, Ohio

tion purposes is over the required 18 inches.

The advantage of this 20-foot elevation is apparent at high-inventory time. When packers or taxes require acceptance of contract purchases, there is a place for the goods, with less need to resort to outside storage. By building to 20 instead of 15 feet, warehouse capacity is increased up to 33 percent, while construction cost rises only about five percent. Why plan more footage when it is much cheaper to build extra cubage? Added height may not be needed at the time of building, but, by providing for it at a slight added expense, the inevitable date of expansion can be postponed. Of course, if plans call for rapid growth, adequate space and cubage must be provided.

Long observation of the food trade reveals that wholesalers and supermarket businesses quickly grow to the limit of the physical plant—and that there are very few trade areas in which aggressive firms cannot grow. By the same token, other kinds of business can expand just as easily if the physical plant can accept the volume brought in by aggressive merchandising.

High warehouse ceilings facilitate the vertical use of land that might not permit lateral expansion. If you cannot spread out, you can grow up. Increasing altitude from 15 to 20 feet means 33 percent more capacity; 33 percent greater sales volume at negligible extra occupancy expense; lower expense per unit shipped; and lower overhead, improving flexibility in the competitive market.

A final and most important advantage: extra height means other industries can use the building, making it easier to mortgage or sell when it is outgrown.

3. Why Utmost Mechanization?

Unit load machines cut the number of piece-by-piece handlings in half. If all movement is manual, each case must be handled six times: from arriving vehicle to warehouse cart . . . to storage stack . . . to cart . . . to selection stack . . . to cart . . . and into outbound vehicle. But when pallets are used, the case is

handled three times: when the pallet load is formed . . . when it is broken down for order-picking . . . and when it is loaded into the outbound truck. All intermediate movements are done with machines that move the pallet loads.

Machines accelerate operation. Since case handlings are reduced, the same labor force working the same hours handles more tonnage, and cost per ton is cut.

Machines make it possible to use maximum cubage. Obviously, the "bucket-brigade" operation can be

dispensed with, and maximum cubage used, only if lift trucks—or other machinery—elevate the goods to the maximum useful height.

So machines reduce costs. Cars are unloaded and stored in an hour; the order-pick line is quickly restuffed; small left-overs from originally large lots can be relocated to clear areas for new large lots; and, as already noted, cubage may be used to capacity.

4. Why the Small Pallet?

The small pallet, up to 36 inches

TURNABOUT[®]

ADJUST-A-FORK

HYDRAULIC LIFT TRUCK

with interchangeable forks

As low as \$350 for complete truck

capacity 2500 lb.

At last, improved design and mass production techniques give you a quality product, properly priced. The Turnabout will immediately prove its superior performance with extra strength where needed most . . . high maneuverability . . . ease of operation. Resinoid type casters and aluminum leader wheels at no extra cost.

INTERCHANGEABLE FORKS: Easily interchangeable forks are available in five standard lengths. They may also be adjusted on the truck frame to provide 25" or 27" width.

UNCONDITIONALLY GUARANTEED: The Rack Turnabout is unconditionally guaranteed against defects in workmanship or materials for one year.

TRUCK COMPLETE	
With either 30", 36", 40", 42", or 48" forks . . .	\$350
With either 54" or 60" forks . . .	\$390

RACK HYDRAULIC EQUIPMENT CORPORATION
CONNELLSVILLE, PENNSYLVANIA
AGENTS IN PRINCIPAL CITIES UNITED STATES, CANADA, EUROPE

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Circle No. 86 on Reader Service Card

Check your Tackle Blocks for best service. Worn sheave grooves, bearings and pins are expensive.

LOWER HANDLING COSTS

- Blocks properly designed and engineered for your specific operation reveal savings you benefit from.

Our engineering services are available for your specialized needs.

Over a quarter century of service.

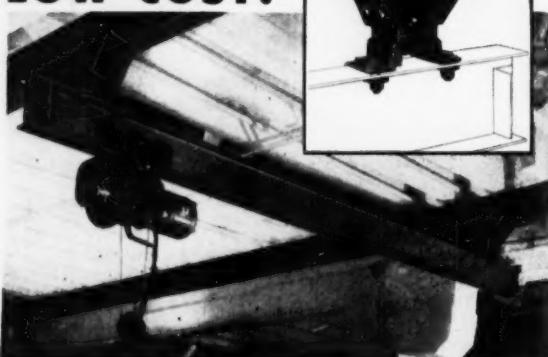
Send for our complete catalog today. **MADESCO TACKLE BLOCK CO.**
EASTON, PA.



HAE-M592-2-54

MADESCO BLOCKS

MAKE YOUR OWN CRANE... ...at a NEW LOW COST!



Handle loads up to 2000 lbs., SAFELY,
easily... Buy crane beam locally — we
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ball bearing Flexo-Crane trucks cost only.....
Simple instructions come with shipment.

Complete Flexo-Crane, with hoist and
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BULLETIN F-128

**ABELL-HOWE
COMPANY**

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162

WAREHOUSING COSTS

Continued

wide by 40 inches long for the grocery trade, permits palletization of more of the inventory spread. Even 25 cases can be palletized, where at least 40 cases are needed to fill large pallets.

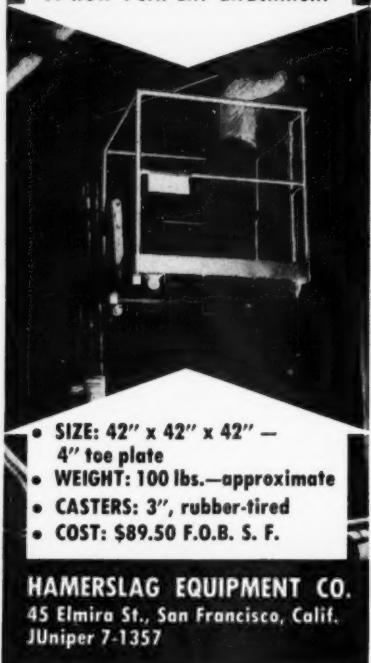
We made a study recently of the movement and inventory quantities of each item carried by a large chainstore warehouse shipping 2500 tons a week. This warehouse is equipped with 48 by 40 pallets. Exclusive of shelf-stock and broken-package goods, the firm handled more than 600 items, of which never as much as a pallet load was carried at one time. So, it was necessary to handpile these items two to a pallet load each time they were received—a costly and arduous task.

A small pallet reduces the aisle width necessary for easy operation. If a pallet is shortened six inches, six inches less aisle space is needed.

Narrower than it is long, the

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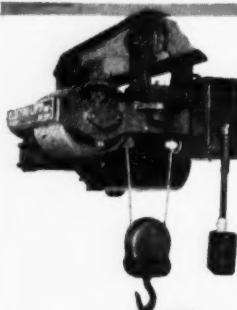
Speed up maintenance with the HECO Safety WORK PLATFORM
A new Fork-Lift attachment



- **SIZE:** 42" x 42" x 42" — 4" toe plate
- **WEIGHT:** 100 lbs.—approximate
- **CASTERS:** 3", rubber-tired
- **COST:** \$89.50 F.O.B. S. F.

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JUniper 7-1357

pick up
production
with
ELECTROLIFT



This is the worm drive hoist that will give your production a big lift. ElectroLift moves materials through your plant with greater speed, safety and efficiency than any crew.

A wide variety of one-man models is available in sizes up to 6 tons. All are designed to operate with low headroom and have optional pushbutton or rope control.

For full details on the features of ElectroLift consult your ElectroLift representative listed in telephone directory or write:

ELECTROLIFT
WORM DRIVE
HOISTS

2177

ElectroLift, Inc.

30 Church St., New York 7, N. Y.

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Circle No. 44 on Reader Service Card for more information

Wide or Narrow...



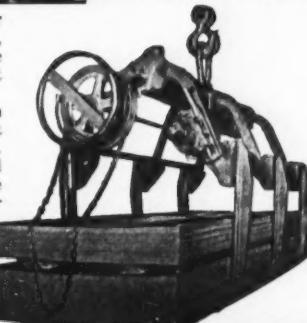
1 C-F LIFTER HANDLES THEM ALL

Whether your production requires a few or many widths of sheet steel, 1 C-F Lifter, with its wide range of jaw and carrying angle adjustments will probably meet all your sheet handling requirements.

Adjustments are made by the operator in a few seconds, permitting the Lifter to shift from wide to narrow sizes almost instantly.

Because it can pick up, carry and unload more loads per hour, using less man and crane time than any other method, a C-F Lifter will soon pay for itself.

Bulletin SL-28 gives you the complete story of C-F Lifter advantages to you. Ask for it today. There's no obligation.



CULLEN-FRIESTEDT CO.

1320 South Kilbourn Avenue • Chicago 23, Illinois

New Bond S-L-U* DRUM TRUCK ... for faster, easier handling



- ◀ Spring action chime hook.
- ◀ Floating axle with rolling motion.
- ◀ Rugged all steel welded construction.
- ◀ Two wheel types: vulcanized-on-rubber tread or semi-steel.
- ◀ Rests in tilted position for maximum drainage.
- ◀ Stands upright for safe storage.

The new Bond "Self-Loading and Unloading Drum Truck takes "the work" out of lifting, moving and draining either drums or barrels... and speeds the job at that! Like every hand truck in the full Bond line, this drum truck is designed and built to give extra service, extra satisfaction!

Write today for your copy of Bond Bulletin R-61... it gives all the facts on the new Bond Drum Truck.

BOND FOUNDRY & MACHINE COMPANY
Manheim, Pennsylvania

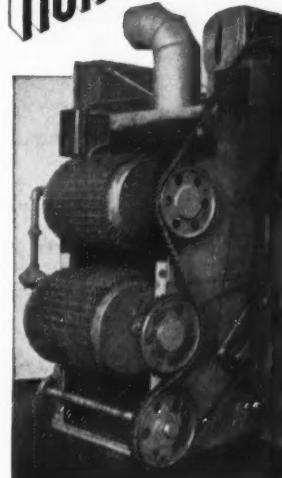
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Metal Belts

for Processing
and Handling all
Materials . . .

engineered for the
specific end use by

ASHWORTH



For applications ranging
from subzero to 2100°F.

Our Engineering and
Testing standards are
your assurance of "The
Right Belt" for the job.

WRITE FOR
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CATALOG 52F

ASHWORTH BROS., INC.
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Los Angeles • New York • Philadelphia • Pittsburgh • Rochester
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163

In hand hoists— It's Coffing

OVER 80 SIZES AND MODELS
TO FILL ALL YOUR NEEDS



**SAFETY-PULL
RATCHET LEVER
HOISTS**

10 roller-chain
models — 1,500-
to 30,000-lb. ▶

2 coil-chain
models — 1,500-
and 3,000-lb.



**CHALLENGER
LIGHTWEIGHT
ALL-STEEL
SPUR-GEAR
HOISTS**

3 models — ½-,
1-, and 2-ton



**MIGHTY-
MIDGET
PULLERS**

2 sizes — 500-
and 1,000-lb.



1 HOIST BINDER — 3,000-lb. capacity

also:

EXTENDED HAND WHEEL HOISTS

6 models — ¼- to 3-ton

ARMY-TYPE HOISTS

(plain and geared)

11 models — ½- to 10-ton

LOW HEADROOM HOISTS

12 models — ½- to 24-ton

CLEVIS-CONNECTED HOISTS

11 models — ½- to 10-ton

DIFFERENTIAL CHAIN HOISTS

2 sizes — ½- and 1-ton

HOIST-ALLS

2 sizes — 1- and 2-ton

SPUR-GEAR HOISTS

22 models — ½- to 25-ton

Ask for more information on the units you need
from the most complete line of hand-operated hoists.
Write Dept. FL4.

COFFING HOIST COMPANY

DANVILLE, ILLINOIS



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164

WAREHOUSING COSTS

Continued

line, the picker might spend 80 percent of his time walking and pushing. So, a line system means more output per man-hour of order-pick time.

It is not true that restuffing the line costs more than the line saves. Eliminate the line and you cut out the restuffing, making it easier for the few men who receive and store the goods, using mechanical equipment. But you also make it demonstrably harder for the eight to twelve order pickers who generally work by hand and on foot.

Available cubage is better used with a selection line because storage areas can be kept fully loaded to top heights. Pallet racks in the line provide storage overhead, and so only in the fast-mover area do front stacks have to be kept down to reachable height—and even here means can be found for retaining high cubage use.

The order-pick line opens the way for predetermining precise

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for BLOCKS
BRICKS • BAGS
BOXES • BALES
BUNDLES • BEER

Steel for
LOW COST
•
Aluminum for LIGHT
WEIGHT

New London "BB12" CONVEYOR

12" Rough Top cleated belt elevates material up or down, forward or back; gas or electric power. Standard lengths 10' to 20'; others available.

Also Conveyors for Bulk Materials.

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**before you buy a fork truck or
lift truck — be sure to see the**



FORK TRUCK

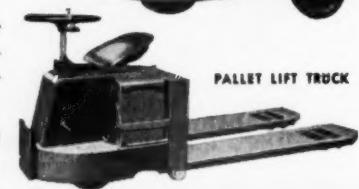
NEW
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**COMBINATION
TRUCKS**

SKID LIFT TRUCK



TRACTOR



PALLET LIFT TRUCK

Whether you're a small organization or a large plant, you can obtain extra advantages by using Market Forge Materials Handling equipment.

Consider **MARKET FORGE** — Your Best Source for: Electric or Gas Powered

- **FORK TRUCKS • PALLET LIFT TRUCKS**
- **SKID LIFT TRUCKS • TRACTORS**

Available on Deferred Payment or Rental Basis

Market Forge Company
EVERETT 4-5 MASSACHUSETTS

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FLOW • APRIL, 1954

Circle No. 124 on Reader Service Card for more information

and specific goods locations. This allows the ton-mileage principle to be applied.

6. The Ton-Mileage Principle: What and Why?

The ton-mileage principle refers to locating goods on the line in relation to their cost-making characteristics of weight, bulk, and velocity. Using the principle, a given tonnage is hauled less distance. For example, a heavy, bulky fast-mover should be placed at the end of the order-pick line, so it does not have to be hauled as far. A light, small, slow-moving item would not warrant preferential location, and it is assigned a place at the beginning of the line. Since it is seldom called for, we can afford to haul it further.

Order-picking is thus easier, cheaper, and faster. Since fast-movers from all merchandise divisions are grouped together at the end of the line, and all slow-movers at the beginning, the picker can frequently skip aisles, push a light load most of the way, and add heavy weights in the last aisle or so. He brings as much to

**a Balanced
for Forward-End**

BARROW
Dumping!

**★ REINFORCED FOR
HEAVY-DUTY SERVICE!**

This Sterling Wheelbarrow has a reinforced tubular steel frame with special steel nose shoe. Provides perfect balance for forward end dumping and extra strength for heavy duty service. Rugged construction includes V-shaped tray braces and 12-spoked steel wheel. Ideal for wheeling sand, scrap, castings, coal and other heavy bulk materials. Can be furnished with pneumatic or zero pressure wheel. Prompt shipment.

Write for literature.

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FOUNDRY EQUIPMENT

STERLING WHEELBARROW COMPANY • MILWAUKEE 14, WIS., U.S.A.

KEEP ALL YOUR TRUCKS IN SERVICE ALL THE TIME



with Nutting Demountable RUBBER TIRED WHEELS

You don't have to buy expensive complete new wheels when tires are worn! Bolted assembly permits tire replacement in minutes—No special tools!

Next time you need new wheels, casters or trucks, change to Nutting Demountables. No stretch or creep under severest service—and only Nutting, pioneers in the field, has sizes and capacities for every type of truck or trailer.

For details and a representative listing of the most complete floor truck line in America write for Junior Catalog 54G . . . or consult classified phone directory under "Trucks" or "Casters" for nearest Nutting representative.



JUNIOR CATALOG 54-G

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1891** *Nutting* TRUCK AND CASTER CO.
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Export Sales: School International, Inc., 4237 North Lincoln Ave., Chicago 18, Ill.
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MERRILL MATERIALS HANDLING DEVICES



MERRILL BROTHERS

56-74 ARNOLD AVENUE MASPETH, N. Y.

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Circle No. 115 on Reader Service Card



LIGHTWEIGHT-ECONOMICAL

It's the Revolator® Portable Uplifter Elevator

Adaptable for shop use or warehouse handling and ideal for shipping and receiving—the new electric Uplifter is the real buy today in materials handling. In two capacities, 1000 - 2000 pounds, platform sizes 24 x 24 and 30 x 30, lifts of 62 and 65 inches on standard models—the Revolator Uplifter can be had powered by a variety of electric circuits ranging from an automobile battery to 220 volt currents.

Priced under all competition, the Uplifter includes all the safety and convenience features that have made Revolator portable elevators a standard in industry. Get full information today on this new, easy operating inexpensive portable elevator. Remember, too—we build Revolator Portable elevators to your particular needs.

Write or phone

REVOLATOR CO.

8739 Tonnele Avenue, North Bergen, N. J. • UNION 3-8120

WAREHOUSING COSTS

Continued

the tailgates, but he does not have so much to push so far. All things equal, labor cost equals tonnage collected times distance hauled.

An analysis of inventory behavior reveals that 20 percent of items that move the fastest account for about 30 percent of tonnage shipped. By locating these items on the walk nearest the tailgates, ton-mileage is improved and the fatigue-factor lowered.

The ton-mileage principle makes for scientific location of goods, eliminates guesswork as to where they should be placed. Greatest speed at least expense for in-and-output can be achieved.

7. What and Why the Slot System?

The slot system is a means of bridging between the order form (set up primarily for merchandising purposes) and the warehouse, where goods should be located only according to the ton-mileage

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NOLAN ONE-MAN CAR DOOR OPENER



Opens Doors in 20 seconds or less!



The Nolan Car Door Opener gives one man a tremendous amount of pulling energy, to get the most stubborn, hard-rolling door wide open in a hurry! New chain has 2000 lbs. tensile strength. No gangs needed. No mangled limbs or loss of life. A few quick pulls on anchor chain and the door opens in a jiffy. The NOLAN saves the low initial cost in first hour of operation.

New safety and efficiency features now make the Nolan 1-Man Car Door Opener a more necessary labor-saving money-saving help than ever before.

Many thousands in constant daily use!

Free Literature. Order one or more NOLAN Model-H Car Door Openers now. Catalog on request.

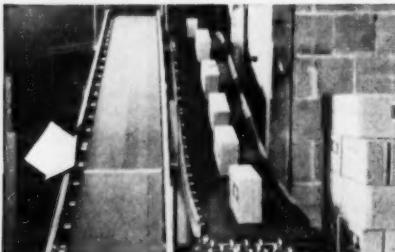
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P.O.B. Bowerston

\$3750

ALLIGATOR



CONVEYOR BELT LACING



Every
Tooth
A Vise*

in Long Continuous Lengths
for Conveyor Belts

- ★ Excellent for Package Conveyors, Portable Loaders, Trenching and Ditching Machines, etc.
- ★ In canneries where corrosion or rust is a problem specify Alligator made of Stainless or Monel.
- ★ For magnetic separators or anti-sparking specify Alligator made of Everdur.
- ★ Separable and smooth on both sides.
- ★ 12 sizes. For belts from 1/16" to 5/8" thick—and any width.

Order from Your Supply House. Ask for Bulletin A-60.

FLEXIBLE STEEL LACING CO. 4702 Lexington St., Chicago 44, Ill.

JUST A HAMMER TO APPLY IT

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the ANSWER to lifting and dumping bottlenecks

ELIMINATE MANUAL LIFTING and speed up materials handling with a Cesco skip-hoist Dumper. Reduce handling time and costs. Single and multi-purpose portable models in standard heights from 6 to 10 ft. Stationary models to 20 ft. Up to 1500 lb. per load, 100 loads per hour. Easy, safe push-button control eliminates accidents.

LIFTS AND DUMPS DRUMS, BOXES,
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CESCO SKIP HOIST DUMPER

Circle No. 42 on Reader Service Card for more information
FLOW • APRIL, 1954

principle. A permanent slot number is assigned to each warehouse location and then, applying ton-mileage, items are assigned slots.

The system saves labor. The slot number serves the order-picker like a house number serves the postman. It does away with hunting and backtracking. It reduces training time for new employees since the new picker need not be familiar with the stock; he selects by slot numbers that run in sequence along an established walk.

Commodity group sequence, previously necessary, is no longer desirable. The line does not have to be re-cast periodically to make room for new items. New goods can be placed wherever suitable slots are available.

Again, cubage can be better utilized. The item can be fitted to the position and slot size its purchase quantity and movement justify. All slots can be kept full. And no slot need be held open for the arrival of any item—more space is ready for use at any time.

These principles promote an efficient, fast-moving operation.

Cost levels are relative to capa-

bility of management and extent of service rendered to retail outlets. Costs might rise because of the latter—for instance, if store managers demanded that trailers be loaded so as to have all labels show while unloading. The effect of this is to cut down palletized shipments. But the store may benefit because the trailer can be used as a room for the retail price-marking operation. Palletized shipments would reduce truck loading time to less than 20 minutes instead of the present two hours, and eliminate the need for most of the platform men.

The wholesale warehouse operation is a dynamic process. It must accommodate itself to unpredictable strains and stresses from any source. When "deals" are bought, the warehouse must take care of the swollen inventory quantity. When there are sales, the warehouse must pre-handle the bloated volume of shipments. The method I have reviewed is efficient and flexible. But, it is never better than the men who run it.

Drawings courtesy Supermarket Merchandising.

Circle No. 2 on Reader Service Card

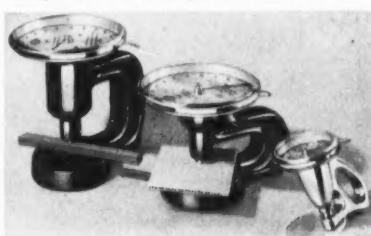


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TESTING INSTRUMENTS
for Thickness • Burst • Basis Weight
Meeting CCC, ASTM and TAPPI Standards. Precision Built. Write for Complete Catalog and Price List.

E. J. CADY & CO. MANUFACTURERS
670 N. Harlem Ave., River Forest, Ill.

Cady Micrometers for Thickness Test



**There's a
BEST TIME
to service
powered equipment**

**Prevent major repair
with TIMELY care**

**HOBBS
Engine Hour
METERS**

Manufacturers specify how often maintenance is needed for trouble-free operation of lift trucks. Your "inside fleet" lasts longer and requires fewer repairs when lubrication, overhaul, oil change, etc. are done ON TIME. The HOBBS HOUR METER TELLS YOU WHEN.

NOT A REVOLUTION COUNTER

... but an electrical timing instrument that shows total HOURS and MINUTES of equipment operation. This accuracy is important for genuinely effective protective maintenance. No revolution counter can do the job!

APPROVED BY LEADING MANUFACTURERS

Leading manufacturers install the HOBBS HOUR METER as original equipment . . . or recommend it as an approved accessory. Ruggedly built and easy to install. For full details, ask your factory branch, representative or distributor . . . or write:

ORIGINATED AND MANUFACTURED EXCLUSIVELY BY

John W. Hobbs Corporation
2061 YALE BLVD. SPRINGFIELD, ILLINOIS

Circle No. 76 on Reader Service Card for more information
FLOW • APRIL, 1954

OHIO

Industrial Trucks and Trailers



Model No. 401



Capacity 16000 lbs.

Electric Welded Channel Construction and equipped with Pressed-On Rubber Tires. Fabricated steel rear hangers, bolster and ball bearing fifth wheel.

Optional Equipment: Available with stake pockets and rear connections, also with open type deck, lattice or plate deck, and hardwood deck. Spoke Steel Wheels can be furnished instead of Rubber Tires.

Heavy Duty Trucks and Trailers to YOUR specifications.

THE OHIO GALVANIZING & MFG. CO.
NILES

• Established 1902 •

OHIO

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Circle No. 11 on Reader Service Card

Improve Your Materials Handling System With
RAZORBACK
Brand
PALLETS

RAZORBACK Pallets are built for greater durability. They will give you longer service with fewer maintenance repairs.

Order RAZORBACK Brand Pallets and save money! Available in nailed or bolted designs, heavy or light weight. Write for information.

Arkansas Pallet Co.

P. O. Box 794-A Phone 6474

PINE BLUFF, ARKANSAS



3-WAY SPACE SAVING . . .

(Continued from page 86)

with narrower arm spread also would not suit.)

Arms on the straddle truck in the firm's possession are 4½ inches from outside to outside; arms are four inches wide. Standard skid racks are designed for 2-inch clearance between the skid load and the upright.

With the narrowed upright of the desired racks, the arms could not enter.

Here is where the elevation of the racks by I-beams became the vital step. These support the racks 6½ inches off the floor, directly under the uprights, and are spaced to allow the straddle arms to enter them.

The new arrangement allowed a three-way saving: (1) Rack sections are compactly aligned (de-

sirable even when no building obstructions are present); (2) more rack sections could be set up between columns; and (3) vertical stacking utilized more cube and less floor area.

Significant Dimensions

In connection with points (1) and (2), the following dimensions are significant:

If rack uprights had extended to the floor, the overall length of the rack (now between building columns) would have been 20 feet 1 inch. The new system produced a rack of 17 feet 7 inches.

Another highly desirable handling improvement was also obtained. In the old method of storage, skid loads were placed on the floor, two or three deep. If material from the second or third row back were needed, the first one or two loads had to be moved out—and then probably back again.

Speedways Conveyors
NEW Speed TABLE

The power belt conveyor with Custom-specified utility at Standard-line prices

10 foot increments
easily bolt together.
Powerful SpeedDrive
motor can be located
in any section of line.

for inspection line • assembly line • work tables
order make-up conveyor • shipping-receiving conveyor

All or any of these operations can be accomplished with a single SpeedTABLE. This is the exciting feature of SpeedTABLE for it has a flexibility of use . . . it can easily be lengthened or shortened, disassembled and set up again in other areas of your plant to do many duties.

It is a revolutionary idea in belt conveyor design . . . that can revolutionize your materials handling methods. Write for complete details and low, low prices today. Ask for new SpeedTABLE BULLETIN BJS4.

SPEEDWAYS
CONVEYORS

202 Rhode Island St.

Buffalo 13, N. Y.

Circle No. 26 on Reader Service Card for more information
168

JAKES

America's Finest
Industrial Trucks and Trailers



MODEL NO. 44B

Low boy 5 ton trailer with platform height only 18 inches. Dual wheels, front and rear, with pressed-on rubber tires. Ideal where a low platform height is required.

SPECIFICATION SHEET AVAILABLE

JAKES FOUNDRY COMPANY

Established 1891

2600 Charlotte Avenue

Nashville 9, Tennessee

Circle No. 79 on Reader Service Card for more information
FLOW • APRIL, 1954

WHAT'S NEW IN EQUIPMENT . . .

(Continued from page 42)

Special Use Conveyor

Metzgar Conveyor Company announces that its Nylo-Roll conveyors, which have been in limited production and in actual operation under extreme conditions during patent procedure, are now available on a production basis. Especially designed for industries

where brine, alkali and acid conditions may cause repeated failures of ball bearings, the units are available in standard widths of 11½, 15, 18 and 24 inches, and lengths as desired, and are equipped with 2-inch zinc grip coated rollers in gravity or live roller types.

Circle 199 on Reader Service Card for more information

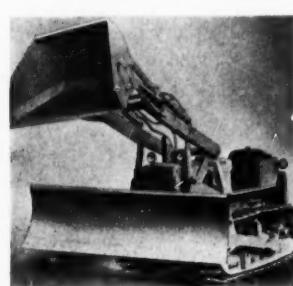
Corrugated Expendable Pallet

A knocked-down paper pallet, which may be manually assembled in less than one minute, is being marketed by Ace Paper Products Company. The pallet is made of a corrugated paper plate, which is pierced to give a group of rectangular tabs, arranged in pairs and spaced parallel to form legs. The spacing is of adequate width to allow entry of forks. The pallet weighs about 7 lbs. and can be made to any dimensional specifications.

Circle 200 on Reader Service Card for more information

Large Tractor For Small Contractor

The production of a new, larger size Terra-Builder has been announced by American Tractor Corporation. The unit is equipped with a 3/4 yard digging bucket, and 7 foot 4 inch heavy duty angle-dozier or 6 foot bulldozer. The bucket operates as a digging loader, leveler, material handling loader and backfiller, and is tapered for self-cleansing. The unit was designed to fill



Circle 201 on Reader Service Card for more information

FLOW • APRIL, 1954

NEVER

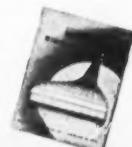


for MAY-FRAN hinged-steel belt

Built for the tough jobs . . . MAY-FRAN hinged-steel conveyor belting withstands conditions that quickly destroy ordinary belts. Its special design and sturdy construction make it suitable for conveying hot forgings, heavy castings, abrasive scrap and many other items.

MAY-FRAN hinged-steel belting can be furnished in widths from 6 inches to 6 feet and in any length or carrying capacity. Solid and perforated links are available in 2½ to 12-inch pitch lengths.

For complete information on the unique MAY-FRAN hinged-steel belting, write today for Bulletin MF-530.



MAY-FRAN

ENGINEERING, INC.

1611 CLARKSTONE ROAD • CLEVELAND 12, OHIO
Circle No. 93 on Reader Service Card for more information

Yes, PneuBin will move...

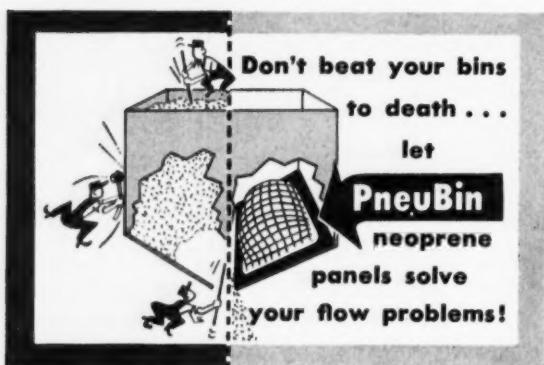
- DIFFICULT CHEMICALS
- SAND • CLAY
- WOOD CHIPS
- ... any material, for that matter

from Your Bins!

Material flow problems are our business. PneuBin is designed to aid in the evacuation of your bins through the principle of "positive displacement." We move the bin contents . . . not the bin.

The PneuBin unit consists of a steel-backed neoprene panel, mounted on the inside wall of your bin. By the pneumatic inflation and deflation of the panel, the bin contents are displaced and disturbed to activation. After the diaphragm has deflated, the air control unit (operating off the regular plant air supply) starts another cycle of inflation and deflation. The process continues automatically at whatever frequency is set on the air controller.

Because the neoprene panel is resistant to oils and most chemicals and is also thick and tough enough to withstand severe abrasive service, PneuBin is applicable to most any bin flow problem.



Sizes: PneuBin panels are available in 14 standard sizes, 4" to 24" wide, 6" to 72" long. Special sizes can be made if required in quantity.

Send for "Flow Stoppage Report" and free literature. PneuBin engineers will gladly make recommendations, with no obligations on your part.

PneuBin is a product of
GEROTOR MAY CORP.
BALTIMORE 3, MD.

Manufacturers of **GEROTOR**
HYDRAULIC PUMPS & MOTORS

Circle No. 66 on Reader Service Card for more information

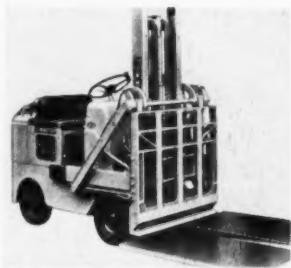
170

the complete equipment needs of the medium-size contractor with one machine. Its weight has been kept to a minimum for easy portability on any light dump or stake truck.

Circle 201 on Reader Service Card for more information

Fork Truck Attachment Economical

A handling device, called the "Tow-Loader", has been made available by Townmotor Corporation. The unit consists of a modified Unloader Accessory, with a gripping device built into the pusher frame. The palletized load is pulled onto either the blades or forks and pushed off at the desired spot. According to the manufacturer, only minimum cost is said to be involved, as handling is speeded up, and the cost of pallet sheets is said to be small.



Circle 202 on Reader Service Card for more information

Floor Protective Wheel

A moulded plastic wheel developed by the Hamilton Caster and Manufacturing Company is said to be floor protective under extreme loads. The manufacturer claims the wheel is noiseless, non-sparking and shock-absorbent. Structurally equal to the semi-steel wheel, it has a rated capacity of 2000 pounds, is equipped with roller bearings and Zerk lubrication fittings. Sizes range from 4 to 12 inches.



Circle 203 on Reader Service Card for more information

Portable Steel Dock Plate

The Woodford Hydrant Company is marketing a heavy steel portable dock plate designed to speed the handling of merchandise in manufacturing plants and warehouses. The plate is fitted with wheels and handles which swing out of the way when the plate is in use. It can be rolled into place, by one man, to



FLOW • APRIL, 1954

bridge the gap between loading docks and trucks, furnishing a stable platform. The handles and wheels lift and move the plate, eliminating the danger of smashed fingers and other injuries to the handler, according to the manufacturer. Several sizes are available.

Circle 204 on Reader Service Card for more information

Towing Tractor Attachments

Frank G. Hough Company, manufacturer of the 4-wheel drive TM "Payloader" towing tractor, has announced new attachments and improvements on this unit. The tractor has 4-speed, full reversing transmission, torque converter

drive, power steering and 4-wheel vacuum booster brakes. Possible attachments include pusher and towbar plates, single or dual railway couplers, air compressor, switchman's platform and catwalk. A rear mounted, hydraulically driven winch, with 30,000 lb. line pull also is available.

Circle 205 on Reader Service Card for more information

Floor Truck Lock

Designed to prevent dangerous hand operation in locking and unlocking a floor truck, the Faultless Floor Truck Lock (FTL) is operated by foot pressure to lock or unlock. Risk of crushed fingers is thus eliminated, and there is no pedal to kick for unlocking.

Product of Faultless Caster Corp., the lock is made with the same overall heights as many standard casters. Spring tension accounts for uneven floors so that the lock will operate and hold the truck stationary at all times when desired.

Circle 206 on Reader Service Card for more information

Swivel-top Table Lift

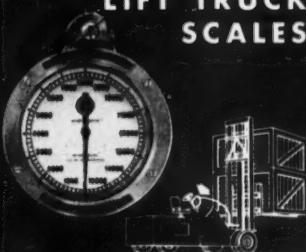
A flat, steel, swivel-top, portable table lift, has been introduced to the field by West Bend Equipment Corp. Designed especially for the handling of heavy jigs and dies weighing up to 2000 pounds, the unit also serves as a sheet or strip feeding table, portable truck loading elevator, or as a temporary work bench.



FLOW • APRIL, 1954

One fine
could have bought several

MARTIN-DECKER LIFT TRUCK SCALES



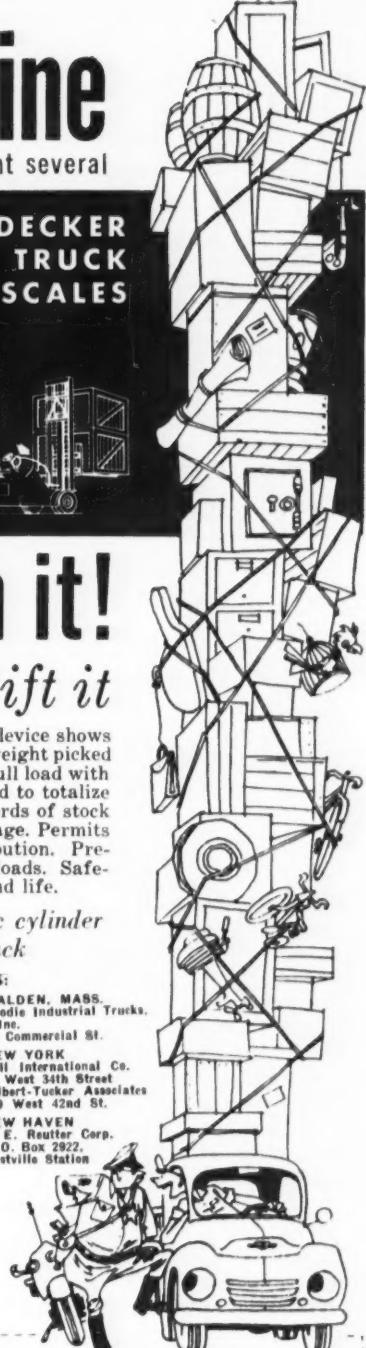
Weigh it! as you lift it

This inexpensive device shows the driver the exact weight picked up thus assuring a full load with safety. It can be used to totalize loads and check records of stock and inter-plant storage. Permits floor weight distribution. Prevents elevator overloads. Safeguards equipment and life.

Fits any hydraulic cylinder type lift truck

DISTRIBUTORS:

DAYTON, OHIO R. E. Condit Company P. O. Box 365	MALDEN, MASS. Brodie Industrial Trucks, Inc. 50 Commercial St.
DETROIT George Meeks Metal Products Co., 6432 Cass Ave.	NEW YORK Bell International Co. 45 West 34th Street
PHILADELPHIA A-1 Industrial Equipment, Inc. 1202-22 Frankford Ave.	Gilbert-Tucker Associates 130 West 42nd St.
PITTSBURGH Brinker Supply Company 6549 Hamilton Ave.	NEW HAVEN C. E. Rauter Corp. P. O. Box 2922, Westville Station
BUFFALO Brodie Industrial Trucks 1450 Michigan Ave.	
KANSAS CITY, KAN. A. S. Kent & Company 541 Minnesota Avenue P. O. Box 126	
LATHAM, NEW YORK Rushmore, Weber & Case, Inc.	



Please send literature on Martin-Decker Lift Truck Scale.
 Have local representative call for an appointment.
DEPT. MH-34

NAME _____

TITLE _____

COMPANY _____

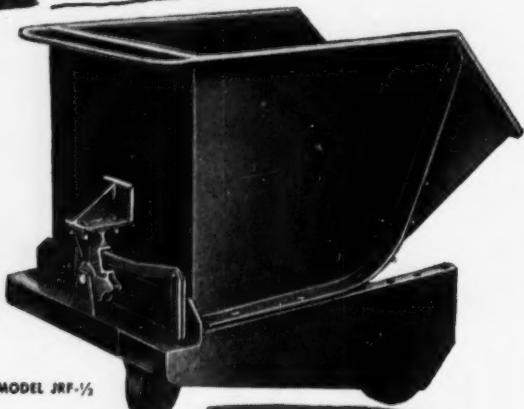
CITY _____ STATE _____

MARTIN DECKER CORP.
LONG BEACH, CALIFORNIA

Circle No. 91 on Reader Service Card for more information

Ideal

FOR PUSHING BY HAND...
OR FORK LIFT TRUCK USE



MODEL JRF-1/2

Phillips
PHIL-DUMP
Junior

Correctly sized for speed and convenience when being transported by hand . . . the Phil-Dump Junior is sturdily built to withstand rough service when being handled by fork lift trucks. With its capacity of one-half cubic yard, this valuable materials handler features a self-dumping hopper . . . which returns and locks in the loading position after it has been emptied.

For outstanding economy through years of service the Phil-Dump Junior is ruggedly made of an all-welded, steel construction. The rear wheel is castered for ease in maneuvering; hard rubber tires prevent damage to plant floors.

Write for Bulletin E-1A



VERSATILE IN SERVICE

Without danger of tumbling the hopper, the Phil-Dump Junior can be emptied while still on the fork lift truck.

MANUFACTURERS
SINCE 1883

PHILLIPS
MINE AND MILL SUPPLY COMPANY

PITTSBURGH,
PA.

MATERIALS HANDLING EQUIPMENT

2389 JANE STREET • PITTSBURGH 3, PA.

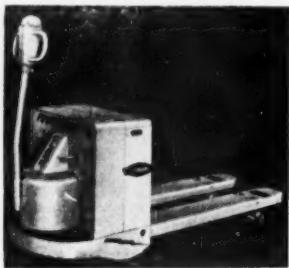
Circle No. 159 on Reader Service Card for more information
172

Mounted on large ball bearing wheels and raised hydraulically with a foot pump, this "Weld-Bilt" unit has a lift of from 28 inches up to 42 inches. Simplicity of operation is featured by the manufacturer.

Circle 207 on Reader Service Card for more information

Electric Powered Hand Trucks

Clark Equipment Company is showing a completely new line of electric powered hand trucks. Called the "Power-worker 26", the truck features short overall length, maximum load stability, plus several distinctive safety characteristics. The name is said to be derived from the fact that the truck is only 26 inches longer than the length of load carried. Included in the complete line are 4000 and 6000 pound platform and pallet trucks, and 1500, 2000, and 2500 and 3000 pound, 24 inch load center, telescopic tilting fork trucks, as well as tractors.



Circle 208 on Reader Service Card for more information

Mobile Belt Loader

A self propelled industrial belt conveyor, called the Travelift, is manufactured by Hovey-Or. The unit is principally used by airlines for cargo handling. Both ends of conveyor are adjustable as to height, the front end adjustment being from 7 to 22 ft., and the rear 30 in. to 7 ft. It may be moved horizontally as well as vertically. Hydraulic power is employed for drive belt; belt widths range up to 30 in.; and various capacities are available.



Circle 209 on Reader Service Card for more information

Dumping Trailers

Hundreds of bulk handling operations fall in the categories easily handled by the Red-E No Tip Dump Trailers. Low center of gravity guards against tripping. Fifth-wheel steering provides easier and safer turning whether in single unit or in trains. Three to five-unit trains are easily handled and one man can dump them. The



FLOW • APRIL, 1954

body can be tilted for easier loading or as a safeguard for upright loading on the side of a hill. Heavy gauge steel construction is used throughout. Either pneumatic or zero-pressure tire may be installed. They're said to be ideal for factory use as well as in parks, cemeteries, golf courses and numerous other places.

Circle 210 on Reader Service Card for more information

Storage Without Corrosion

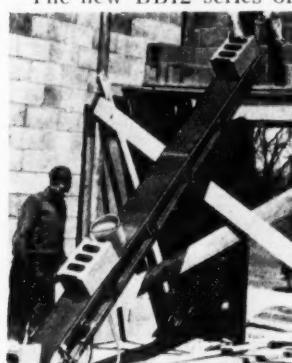
Results of a 5 year test, says The Union Metal Mfg. Co., show that small parts can be preserved in original condition for years if they are stored in Vu-O-Matic equipment. The report of the test states that screws, nails and small, low-carbon steel parts were put in six 8-oz. Vu-O-Matic jars, which were stored, as shown, in a basement where the average relative humidity varied between 80 and 95 percent. As a control, similar parts were stored in open containers under the same conditions. At the end of the fifth year, the report continues, parts in three of the six jars were still free from rust, and it was not until the end of the fourth year that slight oxidation was found on parts in any of the Vu-O-Matic jars—yet jars were opened for inspection at frequent intervals. Parts stored in the open containers were said to show considerable rusting after two months and to be completely covered with an oxide coating at the end of the first year.



Circle 211 on Reader Service Card for more information

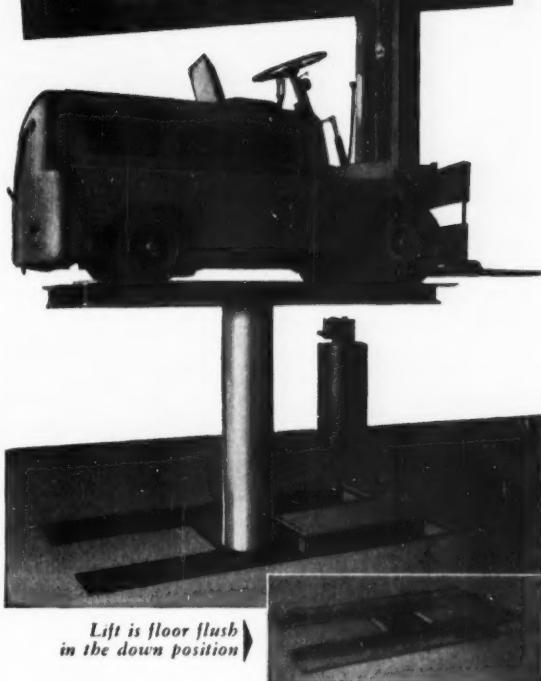
Lightweight, Portable Belt Conveyor

The new BB12 series of light weight conveyors manufactured by New London Engineering Co. is said to be ideal for "on the job use" for all types of construction operations—as well as for handling a wide variety of materials in plants, warehouses, yards, boxcars and trucks. It is designed to carry bags, concrete blocks, shingle bundles, bales, etc., as a level conveyor to points of work, or as a lift conveyor which operates at angles up to 44 deg. Standard speed of the 12 in. rough-top rubber belt is 60 ft. per min. Other speeds are obtainable as required. The frame is welded all-steel, and standard lengths are 10 to 20 feet, with others available upon request. Weight



INCREASE FACTORY TRUCK LIFE,
DECREASE DOWN-TIME
BY SPEEDING SERVICE AND
MAINTENANCE WITH

JOYCE FACTORY TRUCK LIFTS



Lift is floor flush
in the down position

Now, you can keep your factory trucks rolling, economically, with these new Joyce Factory Truck Lifts. The drive-on model (illustrated) features maximum under-truck accessibility, and is designed to accommodate all sizes of factory trucks. An adjustable bridge is provided for three wheel trucks. Also available in two-post, free wheel models. Choose from air-oil or electric hydraulic operation, and hand or foot controls in each model.

The Joyce-Cridland Co. manufactures a complete line of Materialifts, Elevators, Cross-over Bridges, Hydraulic Feed Tables, Factory Truck Lifts and Industrial Jacks.

WRITE TODAY FOR
COMPLETE INFORMATION!



IN CANADA: Midland Foundry
& Machine Co., Ltd., Midland, Ontario

THE JOYCE-CRIDLAND CO.
DAYTON 3, OHIO

Circle No. 150 on Reader Service Card for more information



Strong, safe, stacking racks, portable and stationary, of welded square steel tubing reduce costs in production storage, order assembly, shipping — in every industry. May we show you how we can reduce your handling costs up to 50%?

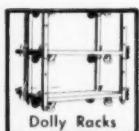
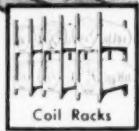
WRITE FOR
THIS NEW
CATALOGUE

**EQUIPMENT
MFG. INC.**

21552 HOOVER ROAD,
DETROIT 5, MICHIGAN

Circle No. 55 on Reader Service Card for more information

174



is 15 lbs. per foot. The conveyor is powered either by electric or gasoline motor. Optional equipment includes side rails, cleated belt, and portable undercarriage.

Circle 212 on Reader Service Card for more information

Fork Extensions Reduce Aisles

Removable fork extensions may now be had on the Reach-Fork trucks manufactured by The Raymond Corporation.

The use of these forks is said to reduce the number of storage aisles required by as much as 50% since many types of loads can be stacked four deep. The outside pallet load is reached in the conventional manner, while the inside load is reached by extending the forks, through the scissors type mechanism. The truck can right angle stack loads up to 48 inches long in a 72-inch aisle. Other features include 2000 pound capacity at 24-inch load center, ability to handle multi-size pallets, and ease of operation for loading and unloading box cars and trucks.

Circle 213 on Reader Service Card for more information



Pneumatic Vibrators To Speed Flow

A line of heavy duty, non-impacting, pneumatic vibrators designed to speed the flow of bulk materials is announced by the VIBRON Division of Burgess-Sterbentz Corporation. The vibrators are said to specifically help reduce processing time by vibrating bins, chutes, hoppers and screens to prevent arching, clogging or sticking of materials, in addition to eliminating air pockets and voids and increasing container carrying capacity. The units are available in a wide range of sizes and capacities to move bulk materials up to 30 tons.

Circle 214 on Reader Service Card for more information



Telescopic Gravity Conveyor

Ten-foot sections of roller and skate wheel telescopic conveyor, manufactured by The Wilkie Company, are now joined at one universal-type

roller bearing point. A self-adjusting transfer bar between sections is said to ease the ride of even small packages along the conveyor, which can be extended with light hand pressure to desired lengths from ten to forty feet. Manufacturer points out that the extreme flexibility of the new telescope joint permits conveyor to be placed on uneven or stepped surfaces as easily as on level floors. Since it is telescoping at either end and is adjustable to expanding and diminishing loads on one or more levels, the conveyor requires no height regulation as it follows loading or unloading point.

Circle 215 on Reader Service Card for more information

Versatile Hand Truck

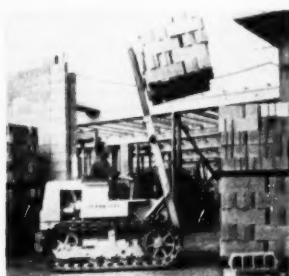
Hand truck model 1152 is said by the Nutting Truck and Caster Company to be a vast improvement over previous designs. The improvement, embodied in the glides, provides easier, safer and better balanced traversal up and down curbs or stairs, according to the manufacturer. The truck is of all electrically-welded, tubular steel, has single or double handles and open or solid nose plates in 5, 7 or 9 inch lengths. The frame is 14x47 inches high, with choice of 6 or 10 inch semi-pneumatic, rubber tired, roller bearing wheels.

Circle 216 on Reader Service Card for more information

Combination Fork Truck-Tractor

The American Tractor Corporation has announced the addition to its line of the Terra-Lift M3, which may be used as a towing tractor or fork truck. It is pointed out that the conversion from fork truck to tractor operation may be accomplished within 10 minutes. Excellent traction is claimed under such adverse conditions as deep mud, sand, snow or ice. Ground pressure under full load is 6 p.s.i. Nine or twelve foot lifting masts are available. Capacity of the unit is 3000 lbs.

Circle 217 on Reader Service Card for more information



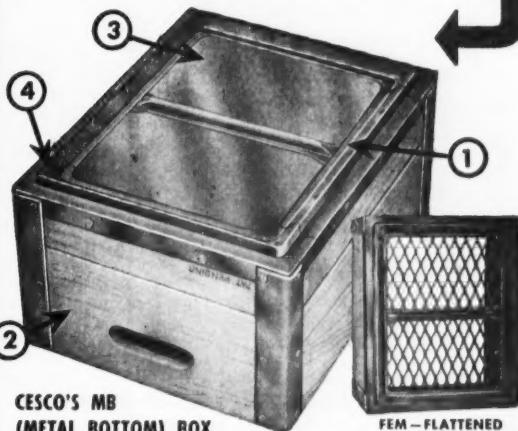
FLOW • APRIL, 1954

Cesco's TOTE-SHOP BOXES

...DO YOUR JOB • EFFICIENTLY • EASILY • ECONOMICALLY
ON CONVEYORS, PALLETS, HAND TRUCKS,
SKID PLATFORMS, OR WHAT HAVE YOU



1. Heavy Duty Strut . . . Prevents Sag . . . Permits Bottom Flex . . . Distributes shock.
2. High Grade Hard Wood Lumber .
3. (FM) Flat Metal Bottom . . . likewise available in open type bottoms FPM-FPM-WM illustrated below.
4. Specially designed "Bottom Stacking Runner" . . . One piece . . . Rounded Corners (No Mitered Joints — No Distortion).



CESCO'S MB (METAL BOTTOM) BOX

(Prices net - per box)	MB-20	MB-24
Lots of 2000	\$2.65	\$3.00
1000 — 1999	2.68	3.03
500 — 999	2.71	3.06
250 — 499	2.74	3.11
100 — 249	2.81	3.16

2 STANDARD SIZES

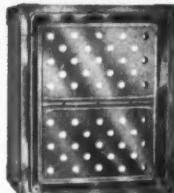
MB-20: 14 1/2" x 11 3/4" x 9 3/4"

MB-24: 17 1/2" x 11 3/4" x 9 3/4"

F. O. B. Northampton, Mass.



FPM - FLATTENED EXPANDED METAL



FPM - FLATTENED EXPANDED METAL



WM - WIRE MESH

CESCO'S WB (WOOD BOTTOM) BOX

Depending upon the material packed and the handling method stock sizes will accommodate loads up to 200 lbs.; possibly greater.

- Ruggedly constructed . . . steel reinforcing features of zinc coated prime stock . . . Self Stacking . . . convenient hand holes
- Binding rivets PLUS corner lock style yields maximum rigidity

Write today for quotations on special sizes . . . Please submit specifications.

(Prices Net - per box)	WB-1	WB-2	WB-3
Lots of 2000	\$1.96	\$2.14	\$2.28
1000 — 1999	1.99	2.17	2.31
500 — 999	2.02	2.20	2.34
250 — 499	2.07	2.28	2.39
100 — 249	2.12	2.30	2.44

No. 1 size — (I.D.) — 14 1/2" x 11 3/4" x 9"

No. 2 size — (I.D.) — 18" x 11 3/4" x 9"

No. 3 size — (I.D.) — 20" x 11 3/4" x 9"

F. O. B. Northampton, Mass.

* Wire Baskets * Special Pallets * Tote Trays

CESCO CONTAINER CO.

475 Fifth Avenue
New York 17, N. Y.
Factory: Northampton, Mass.

Circle No. 34 on Reader Service Card for more information

Circle No. 50 on Reader Service Card

one MAN



... with a
Portable Conveyor
and a B-G Car Unloader
unloaded a car of coal in

45 MINUTES

see your B-G distributor
or write

Barber-Greene
AURORA, ILLINOIS, U.S.A.

for Better Belt Joints

To keep belts in service longer, use only GENUINE Clipper Belt Hooks applied with Clipper Belt Lacers.

use Clipper Belt Hooks

Clipper Hooks are made of the finest quality wire—**BETTER** than ever before—produced for our exclusive use. Hooks hold with firm, sure grip—give longer satisfactory service.

and Clipper Belt Lacers!

With the Clipper No. 9 Portable Lacer, you can lace up to 6 inches of belt in one quick, easy operation. For wider belts, merely repeat the operation.

Phone your Industrial Distributor
for a demonstration!

CLIPPER BELT LACER COMPANY, GRAND RAPIDS 2, MICHIGAN, U.S.A.



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Classified Advertising Section

HELP WANTED

SALESMEN

Material handling (lift truck, etc.) salesmen to carry a line of pallets on commission basis, covering any of the following areas, Baltimore, Md., Albany, Binghamton, Elmira, Syracuse, Bronx, or Yonkers, N. Y., Scranton, Harrisburg, Allentown, Pa. Please write P. O. Box 4, Hollis 23, New York.

DISTRIBUTORS AND/OR MANUFACTURERS' REPRESENTATIVES

Leading West German manufacturer of Overhead Cranes, Hoists (Electric and Chain), Winches, Jacks, Blocks, etc. with established world-wide sales, seeks markets in the United States through exclusive distributors to be serviced from stock carried in the U. S.

This is a highly profitable repeat-sale line with an unlimited potential. Our distributors should have a well-known sales organization, warehouse space and preferably be able to invest in a minimum of stock to be maintained for local delivery.

Provided imported line will not interfere with your present arrangement, write fully and frankly, outlining firm's experience, type of contacts and territories covered. Reply to WOLF WILMS, 44 Whitehall Street, New York 4, N. Y., Representing Puetzer-Drefries, Deutsche Hebezeugfabrik, Duesseldorf.

SALES MANAGER (Or Assistant)

Aggressive, 33 years, family man, wants advancement. Experienced appointing material handling Jobbers. With present firm 8 years. Top national references. Would also make valuable Assistant General Sales Manager, large corporation. Write c/o FLOW Box 4154.

FOR SALE

EIGHT USED CLARK GASOLINE FORK LIFT TRUCKS 1947 and 1948 Models 2000 pounds capacity at 15" load center, 108" lift, operating condition, \$850.00 each f.o.b. St. Louis. Also available bargains in four, six and seven thousand pound gas fork lifts. Write c/o FLOW, Box 4254.

FORK LIFT TRUCKS

TOWMOTORS—LT-35, LT-44, LT-50, LT-56, LT-62, and LT-72, CLARKS—Clippers, Carloaders, Utilitrols, and Yardlifts. HYSTERS—20s, 40s, 75s, and 150s. All in various lifting heights and fork lengths. Many other makes and models to choose from. We RENT—BUY—SELL—LEASE fork lift trucks. ATLAS LIFT TRUCK RENTALS, INC., 1139 So. Wabash Ave., Chicago 5, Ill., WEBster 9-3438.

In production or in storage IRONBOUND EQUIPMENT HANDLES SMALL PARTS MORE EFFICIENTLY



Standard 2-way entry bolted type skid built to handle loads up to 5 tons.



Standard box top welded to standard skid. Available too, with removable boxes. Handles many items in production and storage.



Flexible arrangement of boxes and skids permits tiering and stacking to meet your individual requirements. Provides quick availability, easy handling, or storage for complete units or parts.

Each of the units illustrated has an important use in modern industry. Ironbound skid platforms and box tops are prime sources of increased plant capacity so vitally needed today. Our representative can help you to increase your output and plant space. Catalog GP-7 may help you, too!



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BOX & LUMBER COMPANY
Materials Handling Division

30 HOFFMAN PLACE • HILLSIDE, N. J.
MANUFACTURERS OF QUALITY BUILT SKIDS, SEMI-LIVE SKIDS,
FLOOR TRUCKS, ROLL TRUCKS, DOLLIES AND PRY BARS

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Feature

**4 WAY MOVEMENT
UP, DOWN, IN & OUT**

TWO MODELS

6' x 6' & 6' x 8'

Up to 20,000 Lb. Capacity

FINGER-TIP CONTROL

WM. CHRISTENSEN Co., Inc.
DEPT. F-53 • YORK, PA.

New Clamp "Handles Almost Anything"

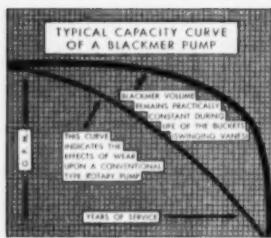
Partial or unitized loads of drums, boxes, barrels, cylinders or what have you, may now be picked up, transported and stacked without the use of pallets or any other factor which would tie the load together. This feat is

accomplished by what has been termed a revolutionary attachment, which is being marketed by the Rheem Manufacturing Company of Philadelphia. Called the "Gripper Arm", the unit's basic design principle is flexibility to permit accommodation of the arms to the shape of the load being handled. A



specially developed, durable, high friction plastic coating is bonded to the pressure plates, and is said to protect the load and reduce the necessary grab or squeeze pressure.

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**BLACKMER
DESIGN
means low
pumping
costs...**

1. Blackmer's swinging and sliding vane principle assures maximum efficiency, positive priming characteristics, and continuing high rate of delivery. Metallic or composition vanes which are self adjusting for wear insure peak performance through years of hard use. When the vanes finally wear, it is easy to replace them and restore the pump to normal capacity in a matter of minutes.
2. The Blackmer design also features replaceable cylinder liners enabling pumps operating under severe conditions or corrosion and abrasives to be renewed at minimum cost.
3. Proper shaft alignment and easy maintenance result from the use of heavy duty bearings which are isolated from the pumpage.
4. The Blackmer pressure control valve, an integral part of the pump, provides minimum variation from set pressure and protects the unit against damage by accidental shut-offs in the discharge system.
5. Pumps are available with speed reduction equipment for operation by all types of power drives (Motors, Engines, Turbines, etc.)
6. Blackmer rotary pumps supply the answer to a wide range of LIQUID MATERIALS HANDLING problems involving delivery to 1500 GPM — viscosities through 100,000 SSU — discharge pressures through 150 PSI — temperatures to 600°F.



BLACKMER

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GRAND RAPIDS • DALLAS • WASHINGTON • SAN FRANCISCO
See Yellow pages for your local sales representative

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METAL MESH BELT
CONVEYORS
for Quenching



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YOUR PROBLEMS! — May we analyze your conveyor problems? Complete engineering "Know How" available. Sheehan Conveyor users have saved thousands of dollars in floor space, material handling and manpower. There's a SHEEHAN Conveyor for most industrial use.

R. T. SHEEHAN CO.

8054 N. Territorial Rd. • Plymouth, Michigan

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FLOW • APRIL, 1954

***THIS is the
BIG difference in
Dock Boards!***

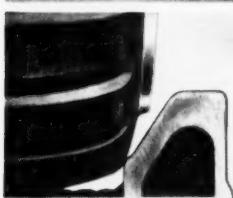
**...A SAFETY CURB THAT PREVENTS
DAMAGE TO POWER TRUCK TIRES!**

**THIS IS THE BIG DIFFERENCE THAT CAN HAND YOU BACK
YOUR DOCK BOARD INVESTMENT—THROUGH REDUCED
TIRE WEAR ALONE . . . PLUS GIVING YOU LONGER
AND SAFER SERVICE FROM YOUR DOCK BOARDS!**

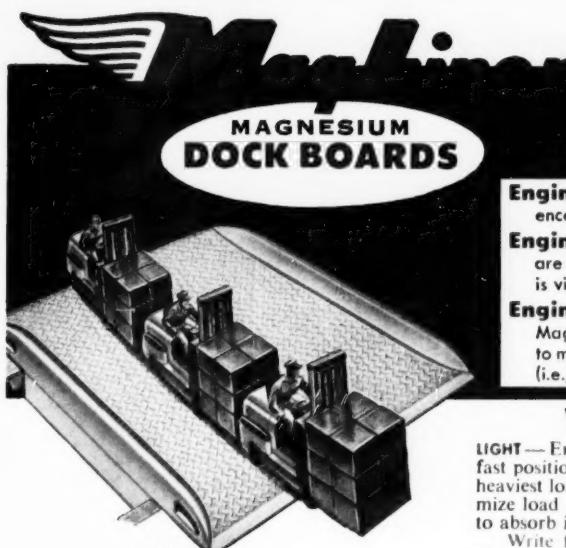


HERE ARE THE FACTS!

Normal curb design found in most of today's dock boards permits undesirable metal-to-metal contact between power truck wheel rims and the side curb. These repeated daily contacts create sharp, jagged edges in the side curb, which in turn cut and gouge tires. In addition, the side curbs are weakened and service life of the board is reduced.



The new Magliner *Tire-Saver side curb is specifically designed to prevent these two costly conditions. Design of the curb is such that only the tire can make contact with the curb rail. Metal-to-metal contact is avoided—side curbs retain full design strength . . . and this common cause of tire damage is prevented!



*Write for
Bulletin
DB-204*

*Pat. Pending

DB-204

MAGLINE, INC.
P.O. BOX 346 • PINCONNING, MICHIGAN

In Canada: Magline of Canada, Limited, Renfrew, Ontario

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Engineered for Span—From measurements taken by experienced Magliner field representatives—at your docks!

Engineered for Special Dock Conditions—No two docks are the same. Here the experience of your Magliner representative is vitally important in determining the right board for you!

Engineered for Equipment Underclearance—Every Magliner dock board is engineered with the proper crown angle, to meet the underclearance requirements of your loading equipment (i.e., pallet trucks, fork trucks, etc.).

Your BEST Dock Board Value—is Magliner!

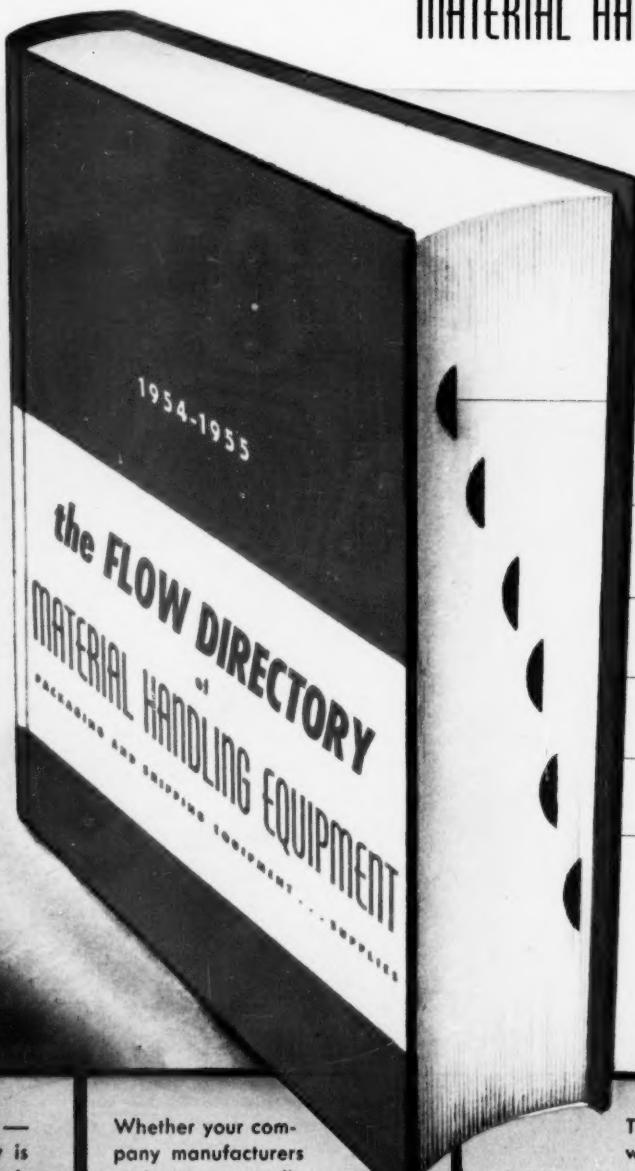
LIGHT—Engineered from the world's lightest structural metal for safe lifting, fast positioning, easy storage! **STRONG**—Designed like a bridge to carry your heaviest loads . . . with capacity to spare! **SAFE**—Chamfered plate edges minimize load jar. Curb ends are radiused to permit wide turns—double strength to absorb impact loads! Positive lock insures against slipping.

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